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PSYCHOLOGY AND SCIENTIFIC METHODS

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PSYCHOLOGY AND SCIENTIFIC METHODS

THE IDEA OF POSSIBILITY

THE idea of possibility has a variety of usages which are, however, mainly two, as follows: First, it sometimes alleges a peculiar predicate of reality, a quality through which the not yet existent may become so, and moreover become so indeterminately. 'This or that may happen; either is possible'; and it is implied that the realization of the particular alternative is not necessitated. Secondly, it expresses 'a certain combination of ignorance and assurance' with respect to the conditionate order of events. 'Such and such is possible since if definite conditions were realized it would follow as a consequence.' Whether these conditions are or will be facts we do not know.

In answer to the question, What does possibility fundamentally mean? these two interpretations are sharply distinguished and opposed to each other. Possibility, according to the first theory, is *real*, even though a particular possibility is not now an existing *fact*. Its true field is generally regarded as that of intelligent action, rarely as the whole sphere of change. The other uses of the term are held to be subordinate, and to lack a genuine application to reality; thus the completely conditioned is, strictly speaking, either actual or necessary according as it has or has not yet come to pass. The principal objections to this first theory are: (1) that it apparently turns intelligent progress into pure chance; (2) that it collects wholly heterogeneous facts under a single term; (3) that it does not explain how a proper usage could become so perverted as to lose its original significance. Nevertheless it prevails both as an unreasoned conviction of popular thought and as a feature of theological systems, especially of scholasticism. Whether it has an adequate logical and psychological basis remains to be seen.

The second interpretation is less spontaneous and more elaborate. Possibility, it declares, is a subjective matter which has no direct metaphysical significance whatever. It is a 'spurious' concept; or, as one writer puts it, the predicate is 'not found as such outside

our reflection.' This theory in its most finished form goes on to say, that in our dealings with hypothetical events we often lack complete insight into their conditions, where yet we find ourselves confronted with practical necessities or moved by habits of adaptation. In such cases we do not remain quiescent, but assume an attitude of greater or less confidence in the matter, the different degrees of alleged 'possibility' corresponding to the extent of our knowledge and ignorance. Being unable to justify a given judgment completely, we nevertheless attach to it a certain value which varies in different cases.

The basis of this interpretation is obviously psychological. In many, perhaps in most, instances when we use the idea of possibility, we are thinking of something which we do not surely *know*. That the accused is possibly innocent, that it may rain to-morrow, that the righteous may win immortality, these are matters which to a great extent lie beyond the range of our vision, and we are conscious of our present mental helplessness. We are also conscious that the mere admission of ignorance is unsatisfactory, and hence we make a kind of elementary volition or tentative acceptance, and declare that these things may be. Furthermore, there is in many cases the observable assurance, not only that the fact escapes us, but that it is in its own field necessarily settled. The bright planet in the evening sky may be Venus or Jupiter, but it is definitely one, and the 'possibility' that it may be either is purely subjective; this we do know. Therefore, from this point of view, possibility means what we find in our minds when we talk about possible things; and hence the term is readily defined through the very evident psychical characters which reveal themselves under introspective scrutiny, namely the characters of doubt, ignorance, and the habit of accepting, more or less fully, that which we can not or do not prove.

To this view we may raise several objections. In the first place the alleged system of elements¹ is unclear and inadequate: unclear because both 'ignorance' and 'assurance' contain difficulties presently to be specified; and inadequate because the combination of their proper meanings does not square with the peculiar idea of possibility. On these points the following criticism may be made:

¹ To state the 'meaning' of an idea is either (i) to point out the objects to which the idea refers, the *thing meant* or meaning in extension, or (ii) to enumerate the mental elements into which the idea may be analyzed, and of which the essential ones constitute the 'intension.' These two processes mutually imply each other, since, on the one hand, the indication of an object does not present it to our intelligence as meaning anything unless it is perceived to be the realization of those ideal elements into which the idea may be resolved, and, on the other hand, to speak in abstractions is not to enlighten unless those abstractions somehow direct us to the concrete thing meant.

The term 'ignorance' is ambiguous. Does it mean: (i) the *fact* of ignorance, the simple lack of apprehension; or (ii) the *consciousness* of ignorance, a positive 'I don't know'; or (iii) a subconscious dissatisfaction or feeling of helplessness, which does not rise above the 'threshold,' but colors the whole mental state? If the first, it is sufficient to remark that the fact of ignorance is not a mental fact, but the absence of one, and hence that it can not be regarded as an element of an idea. By loose usage of speech one might indeed say that the idea of possibility means ignorance in the sense that it arises therefrom; but this would not be the proper 'meaning,' and furthermore it would raise the question whether we predicate possibility because of ignorance, or are ignorant, in some cases at least, because possibility is real. Secondly, if the *consciousness* of ignorance is supposed to be a constituent of the idea of possibility, we observe that it is never present as such in that idea. The transition from 'It may be' to 'I don't know' is a distinct mental step. This fact, however, does not show that ignorance is not elementary, for the process of analysis often introduces a change of form into its products. It is, therefore, plausible that the idea in question contains some subconscious factor, some vague sense of ineptness, which may be precipitated by reflection as the consciousness of ignorance; and if this were true the above supposition would be justified. But is it true? In the assertion, 'It is possible for me to raise the window,' is there uncertainty about the matter? No consciousness of doubt comes to light; in fact I am quite sure that I shall not do so. To retort that I may be mistaken, is to miss the point, for, as has already been explained, the *fact* of ignorance is not a mental element. If there is a subconscious factor it remains concealed so persistently as to raise a suspicion as to its identity; or if it does emerge it appears as an inference rather than as the conscious expression of a vaguely felt incapacity. Hence in many cases, I am inclined to believe, the mind does not naturally tolerate the suggestion of ignorance as constituent, at least fundamentally, of the idea of possibility.

Equally unclear is the term 'assurance.' In this connection it can mean only (i) intellectual certainty, or (ii) an attitude primarily volitional but varying in strength with the extent of one's information as to its object, a disposition to act or to ignore. Neither meaning is finally satisfactory, however. It hardly needs to be pointed out that when we allege possibility we are not ordinarily certain of anything except that possibility itself. 'Our friend may recover from his illness.' Of what are we here assured? Not that a definite fact exists, but rather that it is *possible*. We know, it is true, that he has a sound constitution, and is under expert medical

care; and when we affirm his chance of recovery we do so on these grounds. But the idea of the possibility, as it appears in the particular proposition 'he may recover,' is not our certainty of these facts (and ignorance of others). Long practice has taught us to proceed from what we know and do not know to the affirmation of possibility, but this affirmation is more than a summarized restatement of such premises. It is indeed, and oftentimes primarily, a volitional attitude, and hence 'assurance,' in the second sense noted above, is not improperly regarded as a factor of the idea. This very assertion, however, implies that it can be translated into intellectual terms, since, strictly speaking, an element of an idea can only be ideal. What, then, in our 'assurance' do we actually cognize? Is it not our ability or willingness to treat the supposition as real? To illustrate: 'I can walk or ride down town to-day.' Here there is undoubtedly assurance, but it is a consciousness of power. 'The man with whom I have an appointment may be late.' Again we have a degree of assurance, but what we actually know is that we can entertain the idea of his lateness unobstructed. This is not to say that the idea of possibility is a distinct cognition of treating a hypothetical fact as though it were real, but rather that 'assurance' is shown by examination to consist of, or to contain, a dim consciousness of self-potency of some sort. If so, the idea of possibility deserves a further analysis before it is condemned as fictitious.

The assumption of the ignorance-theory, namely that all usages of the idea are logically homogeneous, is also questionable. For the idea has a complex history, its applications range over many fields; and, granted that a thread of common meaning runs throughout, it is yet supposable that the logical force may vary, so that the possibility which we predicate of the weather to-morrow may not be identical with that which marks a future deed of our own. If this were true it would be necessary to discover, first, the primary and fundamental usage, and, second, the principal variations therefrom, with their causes.

Finally, with respect to the conclusion that the idea is metaphysically unsound, we must feel astonishment that the impostor has flourished so vigorously in the development of thought. The presumption would naturally be that it corresponds directly to something real; and our brief examination of the element of 'assurance' inclines us in the same direction.

To summarize briefly: The theory states (1) that possibility always means the same thing; (2) that this meaning is a blending of ignorance and assurance concerning facts; (3) that it represents no genuine character of reality. We have found the first and third

of these propositions doubtful, and the second only partially true, since one of the alleged elements is not surely indispensable and the other appears remarkably like a cognition of possibility in a particular field, namely the self.

In attempting to solve the problem of the meaning of possibility a preliminary question to be answered is this: In what field of reality should we look for its fundamental type, *i. e.*, for the things, facts, events, originally called possible.

On this point there is reason for believing the region to be that of personal activity. In the first place, the most important possibilities of life are obviously those which belong to our own powers; and in the second place, those which inhere in the powers of other beings like us. This thought, familiarized by such proverbs as 'A man is master of his own fortunes,' has come to be a fundamental rule of conduct. Elementary in child-training because correlative with the lesson of obedience, it gathers weight throughout the whole period of education. Probably the same is also true phylogenetically, with the additional consideration that primitive man, regarding all nature as animate in manlike fashion, must needs reckon outer possibilities as belonging to capricious divinities and demons. This opinion is further supported by the etymology of the words 'possible' and 'may,' for the root meanings, signifying 'power' and 'make,' certainly seem to indicate definitely the type of experience which called for the terms; that is, unless these words have strangely changed their import they show that the 'possible' originally meant what a living being might do. Since the only alternative is the improbable supposition that these conceptions arose in connection with impersonal objects, we may fairly conclude that the first-hand experience which served as a basis for the idea or to which it was an adaptation was a self-experience.

If we have thus ascertained correctly the original 'extension' of the idea of possibility our problem becomes, What is its 'intension'? that is, What is one's mental content when he thinks of a thing-he-may-do?

The main outlines of meaning stand in fairly clear light.² They are: (1) the image of the deed, as performed by the thinker, and referred to the future; (2) the relating of this imaged performance to the present situation as it appears in consciousness in the form

² We must not allow ourselves to be misled by the fact that in actual thinking our ideas appear as mere fragments of imagery, of a 'symbolic' character. These scraps serve their purpose, but when a meaning is in doubt they give way to a precise, systematic arrangement of mental elements. Hence a 'logical' idea is a hypothetical mental state, which may be artificially produced and analyzed by deliberate introspection; its 'meaning' is the result of such analysis.

of (3) motor sensations. There is, in short, a synthesis of the proposal with a present awareness of activity. For example, when I say 'I can go for a walk,' I depict myself as on my way, and make therewith a slight, instantly inhibited muscular effort. Where the synthesis is interrupted by force of experience the project is pronounced impossible.

These are the principal analytic elements in the idea. It is unquestionable that nothing can be called possible unless it can be imagined in some form or other. Less obvious is the relating of this image to the present potency. It may indeed seem that the first imagination is sufficient; certainly it is often hard to detect anything else, so rapid is the procedure of thought. But a more deliberate inspection reveals in such experiences a further factor, a consciousness of doing something; and in many instances the incipient act is evident, even though it is immediately stifled. This suggestion of movement is the feature which distinguishes the idea of a possible deed from a mere image. Doubtless it is ordinarily subconscious, yet a painstaking scrutiny discovers it. Consider, as a simple illustration, the possibility of closing the door. What I find in my own mind is a visual image of the operation, connected with a faint intimation of contracting muscles. In this case the relation appears to be temporal—a sequence within a span of apprehension which constitutes a single idea. Such an interval, brief as it is, may nevertheless contain a disrupting element. Thus if I ask, 'Is it possible to see the other side of the moon?' I have a vague image of the farther surface, and an automatic adjustment of my visual organs as when I use a telescope. I can not connect these details, however, for the 'edge' of the disk stands in the way, and I have learned that this edge is always the same. Experience has therefore given it a negative significance sufficient to destroy the whole. My *effort to see* is frustrated and I answer, 'Impossible.' The project was killed for want of a *potestas* which is not mine.

It is by no means surprising that in most instances some of these elements practically elude observation. It is interesting to notice, however, that whereas inveterate habit tends to sink the criterion to a subconscious level, while on the other hand the novelty of the special proposal gives it greater prominence in consciousness, yet if the matter be doubtful there is invariably a resort to experimental activity. It is as though the self proceeded on the well-known principle that you can't tell whether a thing is possible until you actually *try*.

Psychologically, then, the predicate 'possible' as applied to our own deeds means a fluent imaginary transition between what is pro-

posed and our present condition. Hence the mainspring of the idea is the consciousness of beginning an operation which reaches beyond the present instant; *i. e.*, the cognition of self-activity is logically prior to the idea of possibility.

It remains to consider how this meaning might have been extended to other situations, and in the course of time altered. Probably several influences contributed to the result. In the first place, assuming that the idea appeared at a time when all natural objects were regarded as animate and all events as purposive, we can understand how the predicate 'possible' would be woven into the texture of all experience. Secondly, an event to which the predicate is attached becomes in consciousness a nucleus of associations, important among which is the feeling of doubt or of ignorance. The general principle of redintegration would lead us to expect that subsequent events which appeared doubtful would promptly be categorized as 'possible.' Hence a wider meaning of possibility would be the harmonious relation of any imaged content to a point of reference in reality. This last, indeed, often seems to be a mere suggestion of reality-in-general, so that any supposition not self-contradictory naturally possesses the predicate; and thus we get abstract logical possibility, *i. e.*, conceivability, or systematic imagination without inner contradiction. In brief, a kind of mental content originally derived from self-experience and modified according to familiar principles of association, comes to have the vague character of consistency with reality, and is summed up in the term possibility.

The connotation of personal effort is not completely lost, however, when the object of the idea is no longer regarded as animate. Perhaps in a majority of actual cases the 'possibility,' whatever it is, stands in close relation to our life, so that in considering it we are necessarily considering our own attitude toward it. This attitude is not a pure intellectual vision, but a practical attempt to deal with a new situation; it is volitional in character, and as such it involves motor adjustments the perception of which is a constituent of the whole idea. Furthermore, it is at least sometimes true that the absence of contradiction in an idea is felt as the ability to think persistently or progressively, so that here again is a personal characteristic. Altogether, I am inclined to believe that the element of perceived self-activity is generally essential to the idea of possibility.

We come finally to the metaphysical question, 'Is possibility real?' Two points are to be noted. First, in so far as the idea includes the personal feature just considered it refers to a real fact. The proposal regarded as future event, or the conception taken abstractly, is unreal; but each, in its relation to the self—and this relation is

more or less indispensable—involves a reference to a genuine item of reality. In some sense, therefore, possibility is real. Secondly, the problem of 'alternative possibles' is left open. Analysis of the idea of possibility does not inform us whether the execution is determined or undetermined. So, having marched up to the edge of a familiar battle-field, we may reasonably halt.

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BIOMETRY

IT is the history of all sciences that have been developed to any extent, that they pass from a period of superficial observations and speculations, through one of more careful investigation, to one in which all observations are recorded by means of numbers, and the speculations are based upon mathematical formulæ. In other words, while the expression, 'an exact science,' is, in a way, tautological, still it may fittingly be used to express the goal toward which all sciences are pushing; and their progress in that direction may be judged by the extent to which their students express their ideas in quantitative terms.

It is, at present, difficult to conceive of the science of astronomy, for example, apart from formulæ and figures. Physics and chemistry have passed from the purely qualitatively observational stage to the realms of calculus and algebra. And in the study of the evolution of living beings, it is a hopeful sign that its workers are no longer content to say that a given species varies in a certain way, but tell us *how much* it varies in that way. It is no longer sufficient to say that offspring, as a rule, are like the parents; but we must know how much like their parents they are. Natural selection seems to be a very important factor in evolution; but just how real a factor is it?

Large masses of individuals under certain conditions must be carefully measured, and their measurements plotted and compared with those of masses from other conditions. The numerous laws of variation which have been proposed need careful and accurate testing with the rule and balance, on populations from the field and the breeding room. "Whatever views we hold on selection, inheritance or fertility, we must ultimately turn to the mathematics of large numbers, to the theory of mass-phenomena, to interpret safely our observations. As we can not follow the growth of nations without statistics of birth, death, duration of life, marriage and fertility, so it is impossible to follow the changes of any type of life

without its vital statistics.”¹ It is with these vital statistics that the relatively new phase of investigation known as ‘biometry’ deals.

It is the study to which Darwin looked forward when he said,² “The chief point, which I am, and have been for years, very anxious about, is to ascertain whether the *young* of our domestic breeds differ as much from each other as do their parents, and *I have no faith in anything short of actual measurements and the Rule of Three.*” (The latter italics are mine.) Let us, then, consider, briefly, some of the work which has already been done along this line and the methods employed.

It seems to be generally true in physical as well as mental characters that mediocrity is the rule. If a group of individuals, taken at random from a given species, be arranged in subgroups on the basis of the varying magnitude of a certain character, it will usually be found that a great majority of these individuals fall in the classes but little removed from the middle value, while the extreme classes, *i. e.*, those having a value much greater or smaller than the middle value, contain but few individuals. When data of this sort are plotted in the manner which I will now describe we get the so-called *curve of frequencies*.

The various classes are arranged in their order of magnitude. Perpendiculars are erected on a horizontal line as a base. The lengths of these perpendiculars are proportional to the number of individuals in each of the classes, starting at the left with the class having the smallest magnitude of the character in question. The spaces between the perpendiculars should be equal, as should also the range of magnitude of each of the various classes. Now, when the tops of these perpendiculars are joined by a flowing line, we find we have a curve high in the middle (representing the large number of mediocre individuals) and tapering off at each end. For most measurements it will be found to be practically symmetrical about the class containing the largest number of individuals—the most ‘fashionable’ class, hence called the *mode*. This class closely corresponds to the average, or mean value of the character, and the curve itself may be represented by the formula,

$$y = \frac{n}{\sigma\sqrt{2\pi}} e^{-\frac{x^2}{2\sigma^2}}$$

which is the formula of the ‘Normal Curve of Error,’ first deduced by Gauss at the beginning of the last century. We may conceive that the reason so many biological measures conform to this ‘law of probability’ or ‘error’ is that among the countless agencies at work

¹ *Biometrika*, I., p. 3.

² *Life*, II., p. 51.

influencing the growth of a character there are as many favoring it as opposing it, and these, working in all possible combinations, give rise to a curve typical of such chance combinations. However, whatever the reason, the fact remains that this formula, or a modification of it, can be used to represent accurately the data at hand; and if this were all, it would still be of immense value. Let us see some of the things it tells us.

In the first place, it is important to determine the modes of the characters of various species at a given place and time, and compare them with similar modes observed at other places and times, in order to discover just how much evolution, if any, is going on and in what direction the species is moving.

We also have, in the shape of the curve, a measure of the variability of the organ, and can compare it with the variability of other organs, *e. g.*, to discover if secondary sexual characters are really extremely variable. When plotted on the same scale, the more variable character will give a low flat curve, while the less variable one will give a curve with short range, one in which most of the individuals are grouped in, or near, the modal class. The range is itself a measure of variability, but a very poor one. A much better one is the σ of the formula given above. It is the square root of the average of the squared departures from the mean in both directions; and is called the *standard deviation*.

But, although many measurements conform closely to this symmetrical unimodal type of curve, there are many interesting departures. The curves are often 'skew,' *i. e.*, there is a tendency to produce more individuals on one side of the mode than on the other. The chances are not equal that the favorable agencies will exactly counterbalance the unfavorable. Here we would *expect* a gradual shifting of the mode—the evolution of a species—in course of time; but, probably, time alone will tell what skewness actually does mean. It is sometimes so great—*e. g.*, in the case of the number of petals in buttercups—that there are absolutely no individuals on one side of the mode.

Again, the curve may have more than one mode. There are clearly two or more centers of stability. Does it mean that the species is splitting up? An interesting fact in this connection is that in the majority of cases where dimorphism has been investigated, the two halves are skew toward each other. There is need here for much further work.

But probably the most fruitful field of biometry is that of *correlation*. Davenport³ defines correlated variation as 'such a relation between the magnitudes of two or more characters that any

³ 'Statistical Methods,' 2 Ed., p. 42.

abmodality of the one is accompanied by a corresponding abmodality of the other or others.' He further states, that "the principles upon which the measure of correlated variation rests are these. When we take individuals at random we find that the mean magnitude of any character is equal to the mean magnitude of this character in the whole population. Deviation from the mean of the whole population in any lot of individuals implies a selection. If we select individuals on the basis of one character (A, called the *subject*), we select also any closely correlated character (B, called the *relative*)—*e. g.*, leg-length and stature. If perfectly correlated the index of abmodality⁴ of any class of B will be as great as that of the corresponding class of A, or

$$\frac{\text{Index abmodality of relative class}}{\text{Index abmodality of subject class}} = 1.$$

"If there is no correlation, then whatever the value of the index of abmodality of the subject, that of the relative will be zero" (since the relative class is, in this case, random sampling) "and the coefficient of correlation will be

$$\frac{\text{Index of abmodality of relative class}}{\text{Index of abmodality of subject class}} = \frac{o}{m} = 0.$$

"The coefficient of correlation is represented in formulas by the letter *r*. We can not find the degree of correlation between two organs by measuring a single pair only; it is the correlation 'in the long run' which we must consider. Hence we must deal with masses and with averages."

This method is applicable not only to the study of the correlation of various characters—physical, physiological and psychological—as they occur in the same individual, but it has been widely used in the study of heredity as a measure of the likeness of offspring to ancestry, or the likeness between co-parentals. It furnishes a measure of the strength of assortative mating, for it tells us exactly how much more like its mate one of the pair tends to be than a random sample from the population. It has proved useful in medicine, also, *e. g.*, in investigating the relation between vaccination and immunity or recovery. There are many other ways in which it has, in the short past, been a valuable aid to research, and we confidently believe that the end is not yet.

Unfortunately, most of us, like the immortal Darwin, are 'muzzy . . . on proportion and chance.' It is extremely difficult to apply

⁴ Index of abmodality $= \frac{x}{\sigma}$

the formulæ which the mathematicians have worked out, and still harder to understand them. But, undoubtedly, the reward is rich. It is not only that we thereby secure accurate data upon important questions. It is, furthermore, not a 'mere formal clothing of biological conceptions with mathematical symbols.' Such analysis tends to crystallize our notions and makes our conceptions more definite; it will open up new lines of thought, and carry us toward the ultimate goal of a complete understanding of the mechanics of evolution. As in all valuable lines of thought the pitfalls are many, but progress is certain. "Ignoramus; in hoc signo laboremus!"

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DISCUSSION

THE APPLICATION OF CALCULUS TO MENTAL PHENOMENA

IN one of Dr. Montague's recent publications on time perception it was pointed out that we can get a very simple expression for the 'specious present,' which was found to be $\frac{do}{ds}$, if we denote by o the objective and by s the subjective elements of a psychosis. The second derivative would determine the time flow. Without considering the important philosophical results of the theory we shall make the following observations about the method.

The author considers the ratio of the increments Δo and Δs , which occur in the time Δt , and the fraction $\frac{\Delta o}{\Delta s}$ is supposed to approach or attain the limit $\frac{do}{ds}$. It will be of some interest to see what suppositions this statement involves. First of all it is

clear that we have to consider the limit of $\frac{\frac{\Delta o}{\Delta s}}{\frac{\Delta t}{\Delta s}}$, because o is not

an explicit function of s . Though we know little or nothing about the sufficient conditions of differentiability, we can in this case readily indicate the following necessary conditions: (1) o and s must be continuous; (2) both must have a differential quotient with regard to t ; (3) both differential quotients must be continuous;

(4) $\frac{ds}{dt}$ must not be zero in the whole time interval under consid-

eration. It is hard to make those assumptions, when we know nothing about the character of the functions dealt with, especially since s is apparently discontinuous in many points and can not be submitted to the well-known tests.

It is evident that the author had in mind to measure a time period by its relation to a standard change and so to get rid of duration, but he did not see that the conditions of the problem became so much more complicated by the implicit relation of o and s . All these tacit presuppositions would have become clear if the author had assumed that o is an explicit function of s , but such a relation, of which we can get no idea, would never have been granted. The establishing of the indirect relation between o and s by introducing them as functions of time hides the difficulty but does not remove it.

An example will show to what kind of conclusions we come, if we accept the author's view. $\frac{do}{ds}$ varies with time and we may pick out two moments for which this ratio has the same value, as it is always possible because $\frac{do}{ds}$ is continuous and $\frac{d^2o}{ds^2}$ changes sign. The conditions of Rolle's theorem are fulfilled, since continuity of $\frac{do}{ds}$ and existence of the second derivative are supposed by the author, and therefore the second derivative vanishes at least once. The vanishing of $\frac{d^2o}{ds^2}$ is characteristic for the state of ennui and the first conditions are approximately fulfilled if one sits in a quiet room and recalls something. It follows that one must be bored before one can recall anything. Psychological laws of this kind can be deduced easily by every mathematician.

There is not the least doubt that the whole theory of functions could be applied to a psychology of this kind, but the question remains, whether the conclusions logically deduced from our system admit of a verification by experiment. If we consider it an important feature of experimental psychology, that to every implication of our system corresponds an empirical fact and—if possible—*vice versa*, we must renounce speculations about functions of which we know nothing.

Now supposing for a moment that there are no gaps and errors in the author's proof, could we deduce anything from his laws? Of course not. The function is totally unknown and we must measure empirically the value of $\frac{d^2o}{ds^2}$. It would be important to know the derivative if we could construct the function or if we could verify it in some other way, but as we can not we must con-

clude that the use of symbols of which the applicability is uncertain and the meaning too general is of little help in psychology.

Finally it may be mentioned that the interesting attempt to measure a time period by the ratio of a change occurring in it to a standard change also occurring in it fails, because this ratio is a number which becomes a time only when multiplied by a time unit. For such a standard we choose a certain amount of change in ϕ , to which we refer as a standard, for instance the movement of a pendulum. One of the principal features of a standard is constancy, and measurement is impossible without it. We have therefore either a measurement which varies with time or our whole speculations about the specious present break down, because the differential quotient of a constant vanishes everywhere.

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REVIEWS AND ABSTRACTS OF LITERATURE

Some Peculiarities of Fluctuating and of Inaudible Sounds. KNIGHT DUNLAP. *Psychological Review*, Vol. XI., pp. 308-318.

The Effect of Stimuli upon the Traube-Hering Waves. C. E. GALLOWAY. *American Journal of Psychology*, Vol. XV., pp. 499-512.

The Effect of Closing the Eyes upon the Fluctuations of the Attention. BERTHA KILLEN. *American Journal of Psychology*, Vol. XV., pp. 512-514.

The last two of these articles can not well be discussed apart from a series of experiments that have been carried on under the general supervision of the reviewer, and it may therefore be well to take advantage of this opportunity to summarize the earlier results and the general theory which lead to the experiments and which they confirm and support.

This theory, first proposed by Dr. Slaughter in 1901, is, in outline, that the attention waves are related with two physiological rhythms, the rhythm of respiration and the rhythm of blood pressure or change in arterial volume variously known as the Traube-Hering or Sigmund Mayer waves. The evidence was direct. The stimulus appeared during the expansion of the blood-vessels and disappeared during their contraction. The correlation was confirmed by Bonser in ignorance of Dr. Slaughter's results, with the difference that he asserts that disappearance corresponds to expansion, appearance to contraction in volume. Study of his curves, however, indicates that usually the coincidence is not so direct, that the contraction usually begins during the period of appearance, and lasts well over into the time of disappearance. Further evidence is needed on this point, but it seems probable that the results are not so divergent as the verbal formulations would indicate.

Two facts have developed with reference to the influence of stimulations upon the attention waves. These were first formulated by Taylor. The length of the attention wave is affected, usually lengthened, and the ratio between the times of appearance and disappearance is altered. The first suggested at once the similar phenomena in pulse and respiration, and seemed at first sight to support Slaughter's theory. Mr. Galloway's experiments sought to determine whether stimuli did actually have an influence upon the length of the Traube-Hering waves. His results were that the stimuli used, both pleasant and unpleasant, strong and weak, had the effect of lengthening the waves in every instance for the individuals experimented upon. This is confirmatory of the theory so far as it goes, but it is still necessary to study the influence of the stimuli upon the attention and vaso-motor waves simultaneously.

Another bit of evidence of the same tenor is offered by Mr. Galloway's work in the fact that attention and vaso-motor waves have the same daily rhythm of changes in length. In addition it was found that the average length of the two waves was very nearly identical for three subjects, in spite of the fact that they were taken several months apart; for a fourth, the attention waves were approximately double the vaso-motor; and the fifth observer was of the respiratory type—his attention waves corresponded to the respiratory rhythm.

If we bring together the evidence so far accumulated as to the relation of attention and vaso-motor waves we find that they occur simultaneously, that both are influenced by stimuli and usually in the same direction, and that the lengths of the two waves are approximately identical for a given individual at the corresponding time of day.

The second influence of stimuli is touched upon in Miss Killen's paper. Mr. Taylor found that any stimulus tends to increase or decrease the ratio of appearance to disappearance. The result was confirmed in part by Heymans, in that electrical stimulation inhibited weak tones, and in a measure by the work of Wiersma and the reviewer on the attention wave in fatigue in so far as we may regard the ratio between periods of visibility and invisibility as an indication of the functional capacity of cortical cells.

Miss Killen reinvestigated a result, first obtained by Münsterberg and recently cited by Pace as an obstacle to a central explanation of the fluctuations—that closing the eyes at intervals during attention to minimal stimuli would make continuous what previously had been an intermittent sensation. Her investigations indicate that the result obtained by Münsterberg is not universal, but holds only for one type of individual under special conditions. What does happen is that the time of visibility is lengthened or diminished according to personal peculiarity—in one person it was increased, in another diminished and in a third was diminished during one part of the experiment and increased during another. Whether it is increased or diminished depends upon whether the stimulus from closing the eyes exercises reinforcing or inhibiting influence upon the cortical cells involved. The only case in which the fluctuations would disappear would be when the stimulus was near the limen

of fluctuation, and the observer one for whom closing the eyes was a reinforcement. This condition was obtained but once in the entire set of experiments. Miss Killen concludes, then, that the Münsterberg phenomenon can be more easily explained from the central than from the peripheral theory.

Two facts that must have an important bearing upon any theory of attention waves result from the investigation of Dr. Dunlap.

1. Interruption of a minimal sound during the period of disappearance was in more than half the cases correctly noticed by the observer. The sounds were given by tuning-fork and telephone, and could be easily interrupted by the experimenter. The experiments were extended to show that sounds which were inaudible when continuous could be heard at their beginning or cessation. It is noteworthy that the cessation attracted attention more often than the beginning. The author does not attempt any theory, but lets the facts stand for what they are worth. To the reviewer, however, they seem to make strongly for a central theory. Certainly if the peripheral connections were entirely broken there could be no consciousness of the interruption. The fact also suggests an explanation of Pace's observation that when a weak visual stimulus was interrupted during the period of invisibility an after-image could still be seen.

2. In direct contradiction to both Dr. Heinrich and Professor Titchener it was found that minimal pure tones fluctuated. Both tuning-forks and the singing flame were used as sources of sound, and each of five observers clearly noticed the fluctuations.

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Die Farbenempfindung der Netzhautperipherie bei Dunkeladaptation und konstanter subjectiver Helligkeit. WILHELM PETERS. *Archiv für die Gesamte Psychologie*, III., 4, 1904, S. 354-387.

This investigation is concerned with a determination of the relative sensitivity of the different regions of the retina to brightness and to saturation. Peters worked in the dark-room of the psychological laboratory at Leipzig, with a modified form of the Hellpach perimeter. His four stimuli—red, yellow, green and blue—were, like Hellpach's, built up by means of light transmitted through appropriate color filters.

The most prominent feature of Peters's results is their extreme irregularity. The author feels justified, however, in interpreting them to mean that the retinal surface is to be regarded as a tripartite structure, containing a semiperipheral zone upon which color-stimuli appear in lesser saturation than upon more central and more peripheral regions. This interposed zone of minimal saturation is said (*S.* 380) to extend in the great majority of cases, from 35° to 55°, but his tables (*S.* 370f.; 374-8) indicate that its position and extension are wholly fortuitous. Thus it may extend from 15° to 45°, from 15° to 55°, from 15° to 25°, from 25° to 35°, from 25° to 75°, or from 45° to 65°. On one half-meridian it occurred twice, at 15° and again at 65°; while in numerous instances it

did not have the breadth of extension claimed for it. Thus it occurred once, only at the point 55° ; twice, only at 25° ; seven times, only at 35° ; five times, only at 45° ; and in one third of his explorations it did not occur at all.

A similar irregularity characterizes Peters's determinations of brightness sensitivity. He attempts to express these results in a series of general laws (*S.* 369), but here again his statement of the case is at variance with his data. For instance, he assures us that with maximal luminosity of stimulus, red and yellow decrease, while green and blue increase in brightness, upon the paracentral regions. But of the two sets of curves upon which the former assertion is based, one (*Fig. 9*) shows a wholly different relation. Then too, we are told that after red and yellow have reached their minimum, there occurs a distinct increase of brightness upon more peripheral regions. But his curves contain no justification for such a statement. In short, it is impossible to find a general characterization for the results of this investigation excepting in terms of their irregularity and inconclusiveness.

What Peters has done is briefly this: He has explored the retina under varying conditions of fatigue. The initial stimulus of each series was applied to a rested region of the periphery. Subsequent stimulations were repeated without sufficient intervals of pause to allow the retina to recover from the effects of its previous stimulations. So that with the progressive advance of each series towards the fovea, fatigue phenomena occurred in increasing degree. In Peters's results the presence of fatigue is manifested not only by the diminution of saturation and of brightness, but by the appearance of the complementary color tone as well. Thus, he reports that upon regions where a moderate green stimulus normally excites the sensation of yellow, it appeared in various tones of blue; he found that red and yellow also appeared blue while blue appeared yellow. The results yielded by this method are necessarily irregular because the degree of fatigue induced was not constant throughout. Certain of these results—the complementary phenomena—he dismisses with the naïve remark that he is not interested in discovering whether they are due to contrast or to fatigue (*S.* 360); the remainder are made to do service as a measure of the relative sensitivity of the various regions of the *non-fatigued* retina. The net result of the whole investigation is a demonstration of the fact that with different degrees of retinal fatigue, fatigue phenomena occur in different degree.

A chief difference between the methods employed by Peters and by Hellpach consists in the different direction of progressive exploration in the two cases. Peters began his series at the periphery and worked in a centripetal direction, while Hellpach, in his final determinations, proceeded peripheralward from an intermediate region. It was inevitable, then, that the latter should find his zone of complementary colors at the periphery, and that the former should find his zone of complementariness and diminished sensitivity upon a more central region.

The paper under review is after all an improvement upon the previous investigations carried on in the same laboratory by Kirschmann and by

Hellpach, in that Peters recognizes the significance of luminosity of stimulus. It is to be hoped that he will repeat his determinations, employing a method which provides for uniformity of adaptation and for equality of color-value of stimuli. Moreover, it is to be mentioned that no investigation of this topic is complete which refuses to take into account the fact that certain colors do not change in tone in passing across the retina.

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A Factor in Mental Development. MARGARET FLOY WASHBURN. *Philosophical Review*, November, 1904.

"When we trace the development of mental life upward from the lowest forms of the animal kingdom, we are led to believe that the process has been marked chiefly by progress in two respects: first, advance in the power to discriminate among stimuli, and second, the rise, somewhere in the course of development, of the power to form 'free ideas' . . . It is the aim of the present paper to indicate how both these great gains of psychic evolution have been dependent in part at least upon one factor: the organism's growing power to react to stimuli not in immediate contact with the body."

In support of the first part of her thesis the author points to the fact that "stimuli such as light or sound, which can not directly and instantaneously affect the organism's life, are those which have given rise to the greatest number of qualitatively distinguishable sensations. The reason is that, since it is unnecessary for the organism to make . . . instant response to such stimuli, it is at liberty to spend its psychic energies on qualitative analysis. Time can be taken to find out what the stimuli are, because it is not so desperately necessary to discover where they are and act accordingly. . . . On the other hand, the two classes of sensations that illustrate clearly how qualitative discrimination may be swamped through the immediate need for local discrimination are touch sensations and, preëminently, sensations of pain. Here the stimulus . . . is where it may injure, or actually is injuring. Immediate motor response . . . is demanded; there is no time for qualitative investigation. To say that the contact senses have fewer qualities than sight and hearing because the variety of stimuli for sight and hearing is greater, is obviously to beg the question completely. There is as much variety in the chemical constitution of bodies as there is in the ether or air disturbances which they send to us."

In support of the second part of her thesis Professor Washburn urges that stimuli, which by reason of their immediate bearing upon the welfare of the organism are at once transformed into motor reactions, do not have time to make a very deep impress upon the brain. "But when the creature has developed a capacity to be affected by light and sound . . . then the current of energy sent by the stimulus into the nervous substance is not at once drained off, but may linger sufficiently long to produce whatever alteration, whatever impress upon sensory centers, is needful to insure their subsequent functioning as the basis

of a free image. Delayed reaction . . . is then the source of the image-forming power."

The general conception of the ultimate cognitive value of ideas as varying inversely with their immediate motor utility is of course by no means new, but the peculiar merit of this admirable paper seems to the present writer to lie in the fact that its author recognizes not merely the truth of the conception but also its vital importance for the understanding of mental evolution. The primary desideratum of any evolutionary theory is a principle which will allow for a perfectly continuous development of a series of fundamentally different species. Professor Washburn's theory meets this demand. For if we assume that every stimulus expends its energy partly in a motor discharge and partly in modifying a sensory center, we can at once recognize the possibility of two fundamentally different types of organism, in one of which the motor predominates over the sensory result of the stimulus, while in the other the sensory predominates over the motor. As the organism became more and more perfectly adjusted to its environment, its stimuli would be less needed for motor reactions, and would thus become more and more free to expend themselves in modifying the sensory centers, until a *critical point* would be reached in which the energy of the stimulus devoted to sensory modification would just equal the energy devoted to motor discharge. Organisms below this critical point would only possess 'intelligence' or the capacity to profit by *past* experience, but organisms which had passed beyond the critical point would possess 'reason' or the power to form free ideas depictive of the *future*. The difference of the two types of organism would be momentous and yet the evolution of one from the other would be continuous, for it would not directly involve any new factor, but only a change of emphasis in factors already present.

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The Soul—A Study of Past and Present Beliefs. L. D. ARNETT. *The American Journal of Psychology*, 1904, XV., pp. 121-200; 347-382.

This investigation was undertaken by the author, he says, to supply a lack of knowledge on his own part, and for the benefit of others similarly situated. In working toward this result it aims so to present the views of psychologists and of theologians that 'some definite understanding of the use of the term may at least be suggested.'

Primitive ideas of the soul are first considered. The study begins with an effort to get at the conditions that have given rise to this idea and the explanations offered to account for it. The word 'soul' as used by various peoples is dwelt upon. The soul has usually been associated with some animate form,—with the bird, butterfly, mouse, serpent, lizard, fish and other animals. Again it is identified with shadows, with portraits, and with one's image reflected in water or in a mirror. It is most frequently regarded as shadow, breath and wind, then as life, heart, echo, etc. Rarely is the soul believed to be a material object. Sometimes the individual is thought to have a plurality of souls. The

soul is located in the heart, in the brain, in the navel, in the blood, in the bones and in the breath. Mostly all tribes attribute souls to animals; some to plants.

The conclusion of this section is that the primitive idea of the soul can be classed neither as psychological nor as philosophical. 'It is connected more or less with superstitious beliefs.' For the savage the soul probably means life but not mind.

In tracing the ideas of the soul in the Greek philosophers 'a general tendency toward idealism' is seen which reaches its culmination in Plato.

Next are considered theories of the soul classified as theological, philosophical and psychological. While these are to be distinguished they are by no means separable. The first considers the soul in its relation to a 'personal God'—the view of the church. Here 'modern thought tends toward an ethical interpretation of the soul.' The second views the soul in its relation to a world soul, or to the universe, or to the being of the world. The soul for the philosopher is similar in essence to the absolute being. As the conception of the absolute develops in the evolution of new sciences, so will our knowledge of the soul increase. 'The term soul is too large for any one science, each contributes its part to our knowledge of it.' The third or psychological theory defines the soul on a basis of mental phenomena. Here we have the genetic point of view. We have the biological soul, the phyletic soul, the individual inherited soul, the soul of personal consciousness, equaling 'the sum total of conscious reactions,' and the soul of attention representing a cross-section of consciousness. Under the conception of the evolution of soul-life we pass 'from subjective to objective psychology, from feelings to intellect.' Thus the soul may be described, but not defined.

In the above threefold classification, in less than fifty pages, the whole gamut of philosophers has been ranged through down to and including those whom we know *viva voce*.

A questionnaire shows that the soul to the great majority is a theological concept, to a few it is psychological, and to a very few philosophical. The present theological soul is largely the equivalent of 'the totality of a man's life.' 'Recent psychology presents a hostile attitude toward the idea' of a soul. The church, influencing thousands, is a much greater 'factor in molding ideas in regard to the soul' than psychology which reaches the few. For the average man the substance of the soul is found in the feelings. Theories of the self as presented by James, Marshall, Howison, Schiller, Bradley and Royce follow, showing a preference for self, due to its definiteness, over the word soul. The self is more the objective consciousness, while soul is both subjective and objective. The ideas of a soul and of an immortal being persist contemporaneously.

"Our study of the subject leads to the following definitions: for educated thoughtful people the soul probably represents an ethical ideal, in a general way this may be embodied in certain principles, while the majority of Christian people refer to an undefinable mass of feelings."

Truth and Imagination in Religion. RALPH BARTON PERRY. *International Journal of Ethics*, October, 1904, pp. 64-82.

Modern interest in the psychology of religion is beginning to bear fruit, not only in that special field, but also in that of the philosophy of religion. It is true that these psychological results are sometimes substituted for a critical examination of the worth of religious beliefs, but it is also true that they serve to call attention to the nature of these beliefs themselves and thus to indicate the true starting-point for a philosophy of religion. There is a growing recognition of the very apparent principle that an understanding of the religious demands must precede a discussion of the grounds of belief in the possibility of their satisfaction, and that proofs of the existence of God presuppose a knowledge of what religion means by the term. This we find emphasized in the recent book of Professor Knox, in the theological chapters of Professor Fullerton's 'Metaphysics,' and this article of Dr. Perry, the aim of which is to call attention to the distinction between the imaginative elements in religion and those which claim objective validity.

Religion is essentially the sense of a practical situation and, as such, its judgments are practical, having reference to the adjustment of action to meet the conditions of this situation. Hence the religious attitude may remain unchanged in spite of change in scientific conceptions. The religious conception of God refers to the attitude toward man of his residual or total environment, and his religion involves an idea of his own best interests, of this disposition of reality toward him, and of the best means of adjustment in view of these facts. Theoretical truth has significance for religion only in so far as it bears on one of these elements. However science may come to think of the world and however much our conduct may be altered to suit this new conception, it will still remain true that some adjustment to this total environment will be necessary. The system of practical judgments expressing this adjustment will constitute the body of religious truth.

But religion, as concerned with life, is concrete, hence the function of the religious imagination in presenting truth in poetic form. The test of such imaginative forms is not that of objective accuracy and definiteness, but of fitness for the conveyance of practical truth—for presenting the religious reality in life. The content of these ideas will be the attitude of reality toward us, the significance which it has both in nature and in history. So, too, our sense of this attitude toward us will naturally call forth the expression of our own emotion in prayer and worship. How much of the content of religious ideas is imagination must, of course, be determined by reference to their intended use in any individual case, the basis of distinction being whether they influence the nature of the adjustment or affect only the vitality of the truth. Whatever determines our expectancies is meant for truth. What is poetry to one is deepest reality for another, the firm beliefs of the savage becoming the poetry of the later age, and the poetry of the religious genius being embodied in the creed of his prosaic followers. So with the idea of

personality, in that religion is always our response to the conceived attitude of reality to us, there is always a basis for the characterization of God as personal, but the degree to which this term implies human attributes is a matter of individual intention. Every religion holds more beliefs than it attempts to justify and rests in last resort upon individual experience.

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JOURNALS AND NEW BOOKS

THE MONIST. October, 1904. Vol. XIV., No. 5. *The Origin of Species by Mutation* (pp. 641-671): J. ARTHUR HARRIS.—An elaborate survey of the comparative evidence for the inadequacy of the selective theory of the origin of species. Importance is attached to the alleged fact that variation by selection is purely linear or quantitative, increasing or diminishing given characters, rather than providing new ones. The varieties thus derived differ from true species in always tending to revert, on the removal of the selective agencies. *The Christ of Primitive Christian Faith in the Light of Religio-Historical Criticism* (pp. 672-710): OTTO PFLEIDERER.—In the preceding number of *The Monist* the author showed the parallelism of the stories of Christ's conception, birth and life to similar stories in pagan religion. In the present article he treats in the same way the Christian dogmas of Atonement, Sacramental Purification and Resurrection. The most striking, though by no means the only parallel to this trio of myths, is to be found in the Egyptian story of Osiris and Horus. *Paul Rée, An Obituary Tribute* (pp. 711-732): HENRY HOOPER.—A most interesting account of Dr. Rée's philosophical system, especially the parts of it dealing with the origin of conscience in the race and the individual, and with the controversy of realism and idealism. Dr. Rée seems to have been more nearly in sympathy with Hume and with Schopenhauer than with any other philosophers. *The 'Holy Edict' of K'ang-Hi* (pp. 733-746): EDITOR.—The sixteen sacred maxims of K'ang-Hi are here given in English and Chinese, together with the amplifications of them by his son Yung Chin, and explanatory and critical comments by the author. Criticisms and Discussions: '*Humanism*' (pp. 747-752): A. W. MOORE.—A brief sympathetic exposition and criticism of Mr. Schiller's book. *The Religious Experience* (pp. 752-766): RALPH BARTON PERRY.—"My religion is my sense of the disposition of the universe to myself." *Definition of Religion* (pp. 766-770): P. C.—"The characteristic feature of religion is conviction, and its contents a world conception which serves for the regulation of conduct." *The Basle Congress for the History of Religion. The Free-Thought Congress at Rome. The Congress of Arts and Science at St. Louis* (pp. 770-783): P. C. *Paul Rée—Obituary. Mrs. Annie Besant and the Theosophical Society. Book Reviews: Hugo De Vries, Die Mutationstheories: P. C. Chilperic Edwards, The Hamarubai*

Code and the Sinaitic Legislation: ANON. Irving King, *The Psychology of Child Development*: ANON. Edward L. Thorndike, *Educational Psychology*: ANON. Hiram Vrooman, *The Federation of Religions*: ANON. Orlando J. Smith, *Balance, The Fundamental Verity*: ANON.

MIND. October, 1904. N. S., No. 52. *Humanism and Truth* (pp. 457-475): WILLIAM JAMES.—The author, after showing that many of the criticisms of humanism are irrelevant, proceeds to an exposition and defence of the movement. The results are recapitulated at the end of the article under seven heads, constituting a brief and acceptable *credo* of humanism. *Mind and Body in Recent Psychology* (pp. 476-508): A. E. TAYLOR.—The author criticises the parallelistic views of Stout, Ebbinghaus and Münsterberg, and tries to show that the mechanical is not opposed to the teleological but is a lower or limiting type of it, developed from it as habit is developed from volition. *Meinong's Theory of Complexes and Assumptions* (pp. 509-524): B. RUSSELL.—Five theories of knowledge which bear on the question whether what is asserted in a judgment—especially in a false judgment—exists in any way beyond the judgment. The author believes that the relation asserted in a true judgment unquestionably transcends that judgment, but hesitates to agree with Mr. G. E. Moore in holding to the real objective existence of what is asserted by false judgments. *In defence of Humanism* (pp. 525-542): F. C. S. SCHILLER.—The author discusses Mr. Bradley's article on *Truth and Practice* which appeared in the preceding number of *Mind*. He complains that Mr. Bradley's criticism of humanism is irrelevant and full of misunderstandings. *Fresh Light on Molyneux' Problem* (pp. 543-554): T. K. ABBOTT.—The author discusses various cases in which people formerly blind have on gaining their sight been able to distinguish between figures by the new sense. The case of Dr. Ramsay's patient, Carruth, is most fully treated, and the author feels that this case, particularly, justifies the belief that visual and tactual perceptions of figures have resemblance that is intrinsic and prior to all association. Critical Notices. A. E. Taylor, *Elements of Metaphysics*: J. S. MACKENZIE. Herbert Spencer, *An Autobiography*: F. C. S. SCHILLER. E. A. Kirkpatrick, *Fundamentals of Child Study*: J. EDGAR. New Books. Philosophical Periodicals. Notes and Correspondence (Letters by Norman Smith, A. Sidgwick and H. Rashdall).

REVUE DE PHILOSOPHIE. November, 1904. *La Notion de Hazard chez Cournot* (pp. 497-515): G. TARDE.—Cournot in the *Essai sur les Fondements de nos Connaissances* defined a fortuitous event as the result of the combination of several independent causal series. But such independence is a matter of degree always, never complete; often it is a close dependence. *Aristote et Platon suivant Zeller* (pp. 516-534): J. BULLIOT.—Zeller's treatment, following a Hegelian model as it does, arbitrarily discriminates various aspects of the Socratic, Platonic and Aristotelian systems, considering that as essential which fits best the Hegelian scheme. In particular, Socrates' use of concepts is wrongly

interpreted as idealistic (*à suivre*). *La Theorie Physique, son Objet et sa Structure* (pp. 535-562): P. DUHEM. - Primary qualities or properties are not essentially irreducible but only as yet unreduced. Elements are provisional. A mathematical account of facts is inadequate, indeed, an infinity of accounts pertains to a single situation; each is useful according to the accuracy needed in the result. None is ever entirely useless however. We must not overlook the significance of the approximate. *II^e Congrès International de Philosophie* (pp. 563-630): E. P. and J. B. *III^e Congrès International d'Histoire des Sciences* (pp. 631-636): F. M. *Congrès de la British Association for the Advancement of Science* (pp. 637-669): N. VASCHIDE. *Sommaire des Revues*. *Bulletin de l'Enseignement philosophique*. *Cours de M. Lévy-Bruhl*. *Cours de M. Peillaube*.

Bolzmann, L. *Vorlesungen über die Prinzipie der Mechanik*. Leipzig: Barth. 1904. 8vo. 9 m.

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NOTES AND NEWS

THE American Philosophical Association and the American Psychological Association met at the University of Pennsylvania, in Philadelphia, December 28-30, in affiliation with the American Society of Naturalists and other societies meeting with the American Association for the Advancement of Science. Addresses were made by the retiring presidents, Professor Ladd addressing the Philosophical Association on 'The Mission of Philosophy,' and Professor James, the Psychological Association on 'The Nature of Activity.' Both associations joined in a smoker at the Colonnade Hotel on the evening of December 29. Officers for the ensuing year were elected as follows: For the Philosophical Association—President, Professor John Dewey, of Columbia University; Vice-president, Professor J. A. Leighton, of Hobart College; Secretary-Treasurer, Professor J. G. Hibben, of Princeton University; new members of the Executive Committee, Professor H. N. Gardiner, of Smith College, and Dr. R. B. Perry, of Harvard University. For the Psychological Association: President, Professor Mary Whiton Calkins, of Wellesley College; Secretary-Treasurer, Mr. W. H. Davis, of Lehigh University; new members of the Council, Professor G. M. Stratton, of Johns Hopkins University, and Professor Lightner Witmer, of the University of Pennsylvania. A detailed report of the meetings will be published in subsequent numbers of the JOURNAL.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE THING AND ITS RELATIONS

EXPERIENCE in its immediacy seems perfectly fluent. The active sense of living which we all enjoy, before reflection shatters our instinctive world for us, is self-luminous and suggests no paradoxes. Its difficulties are disappointments and uncertainties. They are not intellectual contradictions.

When the reflective intellect gets at work, however, it discovers incomprehensibilities in the flowing process. Distinguishing its elements and parts, it gives them separate names, and what it thus disjoins it can not easily put together. Pyrrhonism accepts the irrationality and revels in its dialectic elaboration. Other philosophies try, some by ignoring, some by resisting, and some by turning the dialectic procedure against itself, negating its first negations, to restore the fluent sense of life again, and let redemption take the place of innocence. The perfection with which any philosophy may do this is the measure of its human success and of its importance in philosophic history. In a recent article in this JOURNAL, 'A World of Pure Experience,' I tried my own hand sketchily at the problem, resisting certain first steps of dialectics by insisting in a general way that the immediately experienced conjunctive relations are as real as anything else.¹ If my sketch is not to appear too *naïf*, I must come closer to details, and in the present article I propose to do so.

I

'Pure experience' is the name which I gave to the original flux of life before reflexion has categorized it. Only new-born babes, and persons in semicoma from sleep, drugs, illnesses or blows can have an experience pure in the literal sense of a *that* which is not yet any definite *what*, tho' ready to be all sorts of whats; full both of oneness and of manyness, but in respects that don't appear; changing throughout, yet so confusedly that its phases interpenetrate, and no points, either of distinction or of identity, can be caught. Pure ex-

¹ JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 20, p. 566.

perience in this state is but another name for feeling or sensation. But the flux of it no sooner comes than it tends to fill itself with emphases, and these to become identified and fixed and abstracted; so that experience now flows as if shot through with adjectives and nouns and prepositions and conjunctions. Its purity is only a relative term, meaning the proportional amount of sensation which it still embodies.

Far back as we go, the flux, both as a whole and in its parts, is that of things conjunct and separated. The great continua of time, space and the self envelope everything, betwixt them, and flow together without interfering. The things that they envelope come as separate in some ways and as continuous in others. Some sensations coalesce with some ideas, and others are irreconcilable. Qualities compenetrates one space, or exclude each other from it. They cling together persistently in groups that move as units, or else they separate. Their changes are abrupt or discontinuous; and their kinds resemble or differ; and, as they do so, fall into either even or irregular series.

In all this the continuities and the discontinuities are absolutely coordinate matters of immediate feeling. The conjunctions are as primordial elements of 'fact' as are the distinctions and disjunctions. In the same act by which I feel that this passing minute is a new pulse of my life, I feel that the old life continues into it, and the feeling of continuance in no wise jars upon the simultaneous feeling of a novelty. They, too, compenetrates harmoniously. Prepositions, copulas, and conjunctions, 'is,' 'isn't,' 'then,' 'before,' 'in,' 'on,' 'beside,' 'between,' 'next,' 'like,' 'unlike,' 'as,' 'but,' flower out of the stream of pure experience, the stream of concretes or the sensational stream, as naturally as nouns and adjectives do, and they melt into it again as fluidly when we apply them to a new portion of the stream.

II

If now we ask why we must thus translate experience from a more concrete or pure into a more intellectualized form, filling it with ever more abounding verbalized distinctions, Rationalism and Empiricism give different replies.

The rationalistic answer is that the theoretic life is absolute and its interests imperative, that to understand is simply the duty of man, and that who questions this need not be argued with, for by the fact of arguing he gives away his case.

The pragmatic answer is that the environment kills as well as sustains us, and that the tendency of raw experience to extinguish the experient himself is lessened just in the degree in which the elements in it that have a practical bearing upon life are analyzed out

of the continuum and verbally fixed and coupled together, so that we may know what is in the wind for us and get ready to react in time. Had pure experience, the pragmatist says, been always perfectly healthy, there would never have arisen the necessity of isolating or verbalizing any of its terms. We should just have experienced inarticulately and unintellectually enjoyed. This leaning on 'reaction' in the pragmatist account implies that, whenever we intellectualize a relatively pure experience, we ought to do so for the sake of redescending to the purer or more concrete level again; and that if an intellect stays aloft among its abstract terms and generalized relations, and does not reinsert itself with its conclusions into some particular point of the immediate stream of life, it fails to finish out its function and leaves its normal race unrun.

Most rationalists nowadays will agree that pragmatism gives a true enough account of the way in which our intellect arose at first, but they will deny these latter implications. The case, they will say, resembles that of sexual love. Originating in the animal need of getting another generation born, this passion has developed secondarily such imperious spiritual needs that, if you ask why another generation ought to be born at all, the answer is: 'Chiefly that love may go on.' Just so with our intellect: it originated as a practical means of serving life; but it has developed incidentally the function of understanding absolute truth; and life itself now seems to be given chiefly as a means by which that function may be prosecuted. But truth and the understanding of it lie among the abstracts and universals, so the intellect now carries on its higher business wholly in this region, without any need of redescending into pure experience again.

If the contrasted tendencies which I thus designate as pragmatic and rationalistic are not recognized by the reader, perhaps an example will make them more concrete. Mr. Bradley, for instance, is an ultra-rationalist. He admits that our intellect is primarily practical, but says that, for philosophers, the practical need is simply Truth.² Truth, moreover, must be assumed 'consistent.' Immediate experience has to be broken into subjects and qualities, terms and relations, to be understood as truth at all. Yet when so broken it is less consistent than ever. Taken raw, it is all undistinguished. Intellectualized, it is all distinction without oneness. 'Such an arrangement may *work*, but the theoretic problem is not solved' (p. 23). The question is '*how* the diversity can exist in harmony with the oneness' (p. 118). To go back to pure experience is unavailing. 'Mere feeling gives no answer to our riddle' (p. 104). Even if your intuition is a fact, it is not an *understanding*. 'It is a mere

² 'Appearance and Reality,' pp. 152-3.

experience, and furnishes no consistent view' (pp. 108-9). The experience offered as facts or truths 'I find that my intellect rejects because they contradict themselves. They offer a complex of diversities conjoined in a way which it feels is not its way and which it can not repeat as its own. . . . For to be satisfied, my intellect must understand, and it can not understand by taking a congeries in the lump' (p. 570). So Mr. Bradley, in the sole interests of 'understanding' (as he conceives that function), turns his back on finite experience forever. Truth must lie in the opposite direction, the direction of the Absolute; and this kind of rationalism and pragmatism walk thenceforward upon opposite paths. For the one, those intellectual products are most true which, turning their face towards the Absolute, come nearest to symbolizing its ways of uniting the many and the one. For the other those are most true which most successfully dip back into the finite stream of feeling and grow most easily confluent with some particular wave or wavelet. Such confluence not only proves the intellectual operation to have been true (as an addition may 'prove' that a subtraction is already rightly performed) but it constitutes, according to pragmatism, all that we mean by calling it true. Only in so far as they lead us, successfully or unsuccessfully, back into sensible experience again, are our abstracts and universals true or false at all.³

III

In Section VI of my recent article, 'A World of Pure Experience,' I adopted in a general way the common-sense belief that one and the same world is cognized by our different minds; but I left undiscussed the dialectical arguments which maintain that this is logically absurd. The usual reason given for its being absurd is that it assumes one object (to wit, the world) to stand in two relations at once; to my mind, namely, and again to yours; whereas a term taken in a second relation can not logically be the same term which it was at first.

I have heard this reason urged so often in discussing with absolutists, and it would destroy my radical empiricism so utterly, if it were valid, that I am bound to give it an attentive ear, and seriously to search its strength.

For instance, let the matter in dispute be a term M , asserted to be on the one hand related to L and on the other to N ; and let the two cases of relation be symbolized by $L - M$ and $M - N$ respectively. When, now, I assume that the experience may immediately come and be given in the shape $L - M - N$, with no trace of

³ Compare Professor MacLennan's admirable *Auseinandersetzung* with Mr. Bradley, in this JOURNAL, Vol. I., No. 15, p. 403 ff., especially pp. 405-407.

doubling or internal fission in the M , I am told that this is all a popular delusion; that $L - M - N$ means two entitatively different experiences, $L - M$ and $M - N$ namely; and that although the Absolute may, and indeed must, from its superior point of view, read its own kind of unity into M 's two editions, yet as elements in finite experience the two M 's lie irretrievably asunder, and the world is broken and unbridged between them.

In arguing this dialectic thesis, one must avoid slipping from the logical into the physical point of view. It would be easy, in taking a concrete example to fix one's ideas by, to choose one in which the letter M should stand for a collective noun of some sort, which noun, being related to L by one of its parts and to N by another, would inwardly be two things when it stood outwardly in both relations. Thus, one might say: 'David Hume, who weighed so many stone by his body, influences posterity by his doctrine.' The body and the doctrine are two things, between which our finite minds can discover no real sameness, though the same name covers both of them. And then, one might continue: 'Only an Absolute is capable of uniting such a non-identity.' We must, I say, avoid this sort of example, for the dialectic insight, if true at all, must apply to terms and relations universally. It must be true of abstract units as well as of nouns collective; and if we prove it by concrete examples we must take the simplest, so as to avoid irrelevant material suggestions.

Taken thus in all its generality, the absolutist contention seems to use as its major premise Hume's notion 'that all our distinct perceptions are distinct existences, and that the mind never perceives any real connexion among distinct existences.' Undoubtedly, since we use two phrases in talking first about ' M 's relation to L ' and then about ' M 's relation to N ,' we must be having, or must have had, two distinct perceptions;—and the rest would then seem to follow duly. But the starting-point of the reasoning here seems to be the fact of the two *phrases*; and this suggests that the argument may be merely verbal. Can it be that the whole dialectic consists in attributing to the experience talked-about a constitution similar to that of the language in which we describe it? Must we assert the objective doubleness of the M merely because we have to name it twice over when we name its two relations?

Candidly, I can think of no other reason than this for the dialectic conclusion;⁴ for, if we think, not of our words, but of any simple concrete matter which they may be held to signify, the experience itself

⁴Technically it seems classable as a fallacy 'of composition.' A duality, predicable of the two wholes, $L - M$ and $M - N$, is forthwith predicated of one of their parts, M .

belies the paradox asserted. We use indeed two separate concepts in analyzing our object, but we know them all the while to be but substitutional, and that the M in $L - M$ and the M in $M - N$ mean (*i. e.*, are capable of leading to and terminating in) one self-same piece, M , of sensible experience. This persistent identity of certain units (or emphases, or points, or objects, or members—call them what you will) of the experience-continuum, is just one of those conjunctive features of it, on which radical empiricism insists so emphatically.⁵ For samenesses are parts of experience's indefeasible structure. When I hear a bell-stroke and, as life flows on, its after image dies away, I still hark back to it as 'that same bell-stroke.' When I see a thing M , with L to the left of it and N to the right of it, I see it as one M ; and if you tell me I have had to 'take' it twice, I reply that if I 'took' it a thousand times I should still see it as a unit.⁶ Its unity is aboriginal, just as, in my successive takings of it, the multiplicity is aboriginal. It comes unbroken as *that M*, as a singular which I encounter; they come broken, as *those* takings, as my plurality of operations. The unity and the separateness are strictly coordinate. I do not easily fathom why my opponents should find the separateness so much more easily understandable that they must needs infect the whole of finite experience with it, and relegate the unity (now taken as a bare postulate and no longer as a thing positively perceivable) to the region of the Absolute's mysteries. I do not easily fathom this, I say, for the said opponents are above mere verbal quibbling; yet all that I can catch in their talk is the substitution of what is true of certain words for what is true of what they signify. They stay with the words,—not returning to the stream of life whence all the meaning of them came, and which is always ready to reabsorb them.

IV

For aught this argument proves, then, we may continue to believe that one thing can be known by many knowers. But the denial of one thing in many relations is but one application of a still profounder dialectic difficulty. Man can't be good, said the sophists, for man is *man* and *good* is good; and Hegel and Herbart in their day, more recently H. Spir, and most recently and elaborately of all, Mr. Bradley, inform us that a term can logically only be a puncti-

⁵ See above, p. 534 ff.

⁶ I may perhaps refer here to my 'Principles of Psychology,' Vol. I., pp. 459 ff. It really seems 'weird' to have to argue (as I am forced now to do) for the notion that it is one sheet of paper (with its two surfaces and all that lies between) which is both under my pen and on the table—the 'claim' that it is two sheets seems so brazen. Yet I sometimes suspect the absolutists of sincerity!

form unit, and that even single conjunctive relations between things, such as experience seems to yield, are rationally impossible.

Of course, if true, this cuts off radical empiricism without even a shilling. Radical empiricism takes conjunctive relations at their face value, holding them to be as real as the terms united by them.⁷ The world it represents as a collection, some parts of which are conjunctively and others disjunctively related. Two parts, themselves disjoined, may nevertheless hang together by an intermediary with which they are severally connected, and the whole world eventually may hang together similarly, inasmuch as *some* path of conjunctive transition by which to pass from one of its parts to another may always be discernable. Such determinately various hanging-together may be called *concatenated* union, to distinguish it from the 'through-and-through' type of union, 'each in all and all in each' (union of *total conflux*, as one might call it) which monistic systems hold to obtain when things are taken in their absolute reality. In a concatenated world a partial conflux often is experienced. Our concepts and our sensations are confluent; successive states of the same ego, and feelings of the same body are confluent. Where the experience is not of conflux, it may be of conterminousness [things with but one thing between]; or of contiguousness [nothing between]; or of likeness; or of nearness; or of simultaneousness; or of in-ness; or of on-ness; or of for-ness; or of simple with-ness; or even of mere and-ness, which last relation would make of however disjointed a world otherwise, at any rate for that occasion a universe 'of discourse.' Now Mr. Bradley tells us that none of these relations, as we actually experience them, can be real.⁸ My next duty, accordingly, must be to rescue radical empiricism from Mr. Bradley. Fortunately, as it seems to me, his general contention, that the very notion of relation is unthinkable clearly, has been successfully met by many critics.⁹

⁷ See above, pp. 534, 540.

⁸ Here again the reader must beware of slipping from logical into phenomenal considerations. It may well be that we *attribute* a certain relation falsely, because the circumstances of the case, being complex, have deceived us. At a railway station we may take our own train, and not the one that fills our window, to be moving. We here put motion in the wrong place in the world, but in its original place the motion is a part of reality. What Mr. Bradley means is nothing like this, but rather that motion is nowhere real, and that, even in their aboriginal and empirically incorrigible seats, relations are impossible of comprehension.

⁹ Particularly so by Andrew Seth Pringle-Pattison, in his 'Man and the Cosmos,' and by L. T. Hobbhouse, in Chapter XII. (the Validity of Judgment) of his 'Theory of Knowledge.' Other fatal reviews (in my opinion) are Hodder's, in the *Psychological Review*, I., 307; Stout's in the *Proceedings of the Aristotelian Society*, 1901-2, p. 1; and MacLennan's in this JOURNAL, No. 15, 403.

It is a burden to the flesh, and an injustice both to readers and to the previous writers, to repeat good arguments already printed. So, in noticing Mr. Bradley, I will confine myself to the interests of radical empiricism solely.

V

The first duty of radical empiricism, taking given conjunctions at their face-value, is to class some of them as more intimate and some as more external. When two terms are *similar*, their very natures enter into the relation. Being *what* they are, no matter where or when, the likeness never can be denied, if asserted. It continues predicable as long as the terms continue. Other relations, the *where* and the *when*, for example, seem adventitious. The sheet of paper may be 'off' or 'on' the table, for example; and in either case the relation only involves the outside of its terms. Having an outside, both of them, they contribute by *it* to the relation. It is external: the term's inner nature is irrelevant to it. Any book, any table, may fall into the relation, which is created *pro hac vice*, not by their existence, but by their casual situation. It is just because so many of the conjunctions of experience seem so external that a philosophy of pure experience must tend to pluralism in its ontology. So far as things have space-relations, for example, we are free to imagine them with different origins even. If they could get to *be*, and get into space at all, then they may have done so separately. Once there, however, they are *additives* to one another, and, with no prejudice to their natures, all sorts of space-relations may supervene between them. The question of how things could *überhaupt* come to be is wholly different from the question what their relations, once the being accomplished, may consist in.

Mr. Bradley now affirms that such external relations as we here talk of must hold of different subjects from those of which the absence of relations could a moment previously have been asserted. Not only is the *situation* different when the book is on the table, but the *book itself* is different as a book, from what it was when it was off the table.¹⁰ He admits that "such external relations seem possible and even existing. . . . That you do not alter what you compare

¹⁰Once more, don't slip from logical into physical situations. Of course, if the table be wet, it will moisten the book, or if it be slight enough and the book heavy enough, the book will break it down. But such collateral phenomena are not the point at issue. The point is whether the successive relations 'on' and 'not-on' can rationally (not physically) hold of the same constant terms, abstractly taken. Professor A. E. Taylor drops from logical into material considerations when he instances color-contrast as a proof that *A*, 'as contra-distinguished from *B*, is not the same thing as mere *A* not in any way affected' ('Elements of Metaphysics,' 1903, p. 145). Note the substitution for 'related' of the word 'affected,' which begs the whole question.

or rearrange in space seems to Common Sense quite obvious, and that on the other side there are as obvious difficulties does not occur to Common Sense at all. And I will begin by pointing out these difficulties. . . . There is a relation in the result, and this relation, we hear, is to make no difference in its terms. But, if so, to what does it make a difference? [*Doesn't it make a difference to us on-lookers, at least?*] and what is the meaning and sense of qualifying the terms by it? [*Surely the meaning is to tell the truth about them.*¹¹] If in short, it is external to the terms, how can it possibly be true of them? [*Is it the 'intimacy' suggested by the little word 'of,' here, which I have underscored, that is the root of Mr. Bradley's trouble?*] . . . If the terms from their inner nature do not enter into the relation, then, so far as they are concerned, they seem related for no reason at all. . . . Things are spatially related, first in one way, and then become related in another way, and yet in no way themselves are altered; for the relations, it is said, are but external. But I reply that, if so, I can not *understand* the leaving by the terms of one set of relations and their adoption of another fresh set. The process and its result to the terms, if they contribute nothing to it [*Surely they contribute to it all there is 'of' it!*] seem irrational throughout. [*If irrational here means simply 'non-rational,' or non-deducible from the essence of either term singly, it is no reproach; if it means 'contradicting' such essence, Mr. Bradley should show wherein and how.*] But, if they contribute anything, they must surely be affected internally. [*Why so, if they contribute only their surface? In such relations as 'on,' 'a foot away,' 'between,' 'next,' etc., only surfaces are in question.*] . . . If the terms contribute anything whatever, then the terms are affected [*altered?*] by the arrangement. . . . That for working purposes we treat, and do well to treat, some relations as external merely I do not deny, and that of course is not the question at issue here. That question is . . . whether in the end and in principle a mere external relation is possible and forced on us by the facts."¹²

Mr. Bradley next reverts to the antinomies of space, which, according to him, prove it to be unreal, although it appears as so prolific a medium of external relations; and he then concludes that "Irrationality and externality can not be the last truth about things. Somewhere there must be a reason why this and that appear together. And this reason and reality must reside in the whole from which terms and relations are abstractions, a whole in which their internal

¹¹ But "is there any sense," asks Mr. Bradley peevishly, on p. 579, "and if so, what sense in truth that is only outside and 'about' things?" Surely such a question may be left unanswered.

¹² 'Appearance and Reality,' 2d edition, pp. 575-6.

connection must lie, and out of which from the background appear those fresh results which never could have come from the premises" (p. 577). And he adds that "Where the whole is different, the terms that qualify and contribute to it must so far be different. . . . They are altered so far only [*How far? farther than externally, yet not through and through?*] but still they are altered. . . . I must insist that in each case the terms are qualified by their whole [*Qualified how? Do their external relations, changed as these are in the new whole, fail to qualify them 'far' enough?*], and that in the second case there is a whole which differs both logically and psychologically from the first whole; and I urge that in contributing to the change the terms so far are altered" (p. 579).

Not merely the relations, then, but the terms are altered: *und zwar* 'so far.' But just *how* far is the whole problem; and 'through-and-through' would seem (in spite of Mr. Bradley's somewhat undecided utterances¹³) to be the full Bradleyan answer. The 'whole' which he here treats as primary and determinative of each part's manner of 'contributing,' simply *must*, when it alters, alter in its entirety. There *must* be total conflux of its parts, each into and through each other. The 'must' appears here as a *Machtspruch*, as an *ipse dixit* of Mr. Bradley's absolutistically tempered 'understanding,' for he candidly confesses that how the parts *do* differ as they contribute to different wholes, is unknown to him (p. 578).

Although I have every wish to comprehend the authority by which Mr. Bradley's understanding speaks, his words leave me wholly unconverted. 'External relations' stand with their withers all unwrung, and remain, for aught he proves to the contrary, not only practically workable, but also perfectly intelligible factors in reality.

¹³ I say 'undecided,' because, apart from the 'so far,' which sounds terribly half-hearted, there are passages in these very pages in which Mr. Bradley admits the pluralistic thesis. Read, for example, what he says, on p. 578, of a billiard ball keeping its 'character' unchanged, though, in its change of place, its 'existence' gets altered; or what he says, on p. 579, of the possibility that an abstract quality A, B, or C, in a thing, 'may throughout remain unchanged' although the thing be altered; or his admission that in red-hairedness, both as analyzed out of a man and when given with the rest of him, there may be 'no change' (p. 580): Why does he immediately add that for the pluralist to plead the non-mutation of such abstractions would be an *ignoratio elenchi*? It is impossible to admit it to be such. The entire *elenchus* and inquest is just as to whether parts which you can abstract from existing wholes can contribute to other wholes by a change of arrangement without change of nature. If they can thus mould the wholes into new *gestaltqualitäten*, then it follows that the same elements are logically able to exist in different wholes [whether physically able would depend on additional hypotheses]; that through-and-through change is not a dialectic necessity; that monism is only an hypothesis; and that an additively constituted universe is rationally thinkable. All the theses of radical empiricism, in short, follow.

VI

Mr. Bradley's understanding shows the most extraordinary power of perceiving separations and the most extraordinary impotence in comprehending conjunctions. One would naturally say 'neither or both,' but not so Mr. Bradley. When a common man analyzes certain *whats* from out the stream of experience he understands their distinctness *as thus isolated*. But this does not prevent him from equally well understanding their combination with each other *as originally experienced in the concrete*, or their confluence with new sensible experiences in which they recur as 'the same.' Returning into the stream of sensible presentation, nouns and adjectives and *thats* and abstracts grow confluent again, and the word 'is' names all these experiences of conjunction. Mr. Bradley understands the isolation of the abstracts, but to understand the combination is to him impossible.¹⁴ "To understand a complex *AB*," he says, "I must begin with *A* or *B*. And beginning, say with *A*, if I then merely find *B*, I have either lost *A*, or I have got beside *A*, [*the word 'beside' seems here vital*] something else, and in neither case have I understood."¹⁵ For my intellect can not simply unite a diversity, nor has it in itself any form or way of togetherness, and you gain nothing if, beside *A* and *B*, you offer me their conjunction in fact. For to my intellect that is no more than another external element. And 'facts,' once for all, are for my intellect not true unless they satisfy it. . . . The intellect has in its nature no principle of mere togetherness" (pp. 570, 572).

Of course Mr. Bradley has a right to define 'intellect' as the power by which we perceive separations but not unions,—provided he give due notice to the reader. But why then claim that such a maimed and amputated power must reign supreme in philosophy? It is true that he elsewhere (p. 568) attributes to the intellect a *proprius motus* of transition, but says that when he looks for *these* transitions in the detail of living experience, he 'is unable to verify such a solution' (p. 569).

¹⁴ So far as I catch his state of mind, it is somewhat like this: 'Book,' 'table,' 'on'—how does the existence of these three abstract elements result in *this* book being livingly on *this* table. Why isn't the table on the book? Or why doesn't the 'on' connect itself with another book, or something that is not a table? Mustn't something *in* each of the three elements already determine the two others to *it*, so that they do not settle elsewhere or float vaguely? Mustn't the *whole fact be prefigured in each part*, and exist *de jure* before it can exist *de facto*? But, if so, in what can the jural existence consist, if not in a spiritual miniature of the whole fact's constitution actuating every partial factor as its purpose? But is this anything but the old metaphysical fallacy of looking behind a fact *in esse* for the ground of the fact, and finding it in the shape of the very same fact *in posse*. Somewhere we must leave off with a *constitution* behind which there is nothing.

¹⁵ Apply this to the case of 'book-on-table'! W. J.

Yet he never explains what the intellectual transitions would be like in case we had them. He only defines them negatively—they are not spatial, temporal, predicative, or causal; or qualitatively or otherwise serial; or in any way relational as we naïvely trace relations, for relations separate terms, and need themselves to be hitched on *ad infinitum*. The nearest approach he makes to describing a truly intellectual transition is where he speaks of *A* and *B* as being 'united, each from its own nature, in a whole which is the nature of both alike' (p. 570). But this (which, *pace* Mr. Bradley, seems exquisitely analogous to 'taking' a congeries in a 'lump,' if not to 'swamping') suggests nothing but that *conflux* which pure experience so abundantly offers, as when 'space,' 'white' and 'sweet' are confluent in a 'lump of sugar,' or kinesthetic, dermal and optical sensations confluent in 'my hand.'¹⁶ All that I can verify in the transitions which Mr. Bradley's intellect desiderates as its *proprius motus* is a reminiscence of these and other sensible conjunctions (especially space-conjunctions), but a reminiscence so vague that its originals are not recognized. Bradley in short repeats the fable of the dog, the bone, and its image in the water. With a world of particulars, given in loveliest union, in conjunction definitely various, and variously definite, the 'how' of which you 'understand' as soon as you see the fact of them,¹⁷ for there is no how except the constitution of the fact as given; with all this given him, I say, in pure experience, he asks for some ineffable union in the abstract instead, which, if he gained it, would only be a duplicate of what he has already in his full possession. Surely he abuses the privilege which society grants to all us philosophers, of being puzzle-headed.

Polemic writing like this is odious; but with absolutism in possession in so many quarters, omission to defend my radical empiricism against its best known champion, would count as either superficiality or inability. I have to conclude that its dialectic has not invalidated in the least degree the usual conjunctions by which the world, as experienced, hangs so variously together. In particular it leaves my empirical theory of knowledge¹⁸ intact, and lets us continue to believe with common sense that one object *may* be known, if we have any ground for thinking that it *is* known, to many knowers.

¹⁶ How meaningless is the contention that in such wholes (or in 'book-on-table,' 'watch-in-pocket,' etc.) the relation is an additional entity *between* the terms, needing itself to be related! Both Bradley (*A. and R.*, pp. 32-3) and Royce ('The World and the Individual,' I., 128) lovingly repeat this piece of profundity.

¹⁷ The 'why' and the 'whence' are entirely other questions, not under discussion, as I understand Mr. Bradley. Not how experience gets itself born, but how it can be what it is after it is born, is the puzzle.

¹⁸ Above, p. 538.

In another article I shall return to this last supposition, which seems to me to offer other difficulties much harder for a philosophy of pure experience to deal with than any of absolutism's dialectic objections.

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SOCIETIES

THE FOURTH MEETING OF THE AMERICAN PHILOSOPHICAL ASSOCIATION

THE American Philosophical Association held its fourth meeting at the University of Pennsylvania on Wednesday, Thursday and Friday, December 28-30, 1904. There were morning and afternoon sessions on Wednesday and Thursday and a morning session on Friday. The session on Tuesday afternoon was commemorative of Immanuel Kant, the Southern Society for Philosophy and Psychology assisting. Professor Addison W. Moore, was expected to read a paper on 'Pure and Practical Reason in Locke,' in commemoration of the bicentenary of the death of John Locke, but, unfortunately, he was unable to attend the meeting. On Thursday morning the association united with the American Psychological Association in a joint session, Professor William James presiding. The president of the association, Professor George Trumbull Ladd, read his address on Thursday evening, in Price Hall, on 'The Mission of Philosophy.' The address was followed by a smoker at the Colonnade Hotel, in which the members of the American Psychological Association joined. The annual dinner of the American Society of Naturalists and affiliated societies was held at the Hotel Walton on Wednesday evening and was largely attended by members of the association. At the business meeting on Thursday afternoon the following officers were elected: President, Professor John Dewey; Vice-President, Professor J. A. Leighton; Secretary-Treasurer, Professor J. G. Hibben; new members of the Executive Committee, Professor H. N. Gardiner and Dr. R. B. Perry. The other members of the Executive Committee are Professors James H. Tufts and H. Heath Bawden, and the retiring members Professors William A. Hammond and F. J. E. Woodbridge. The next meeting of the association will be held in Emerson Hall, Harvard University, in acceptance of the invitation of the Harvard department of philosophy, presented to the association by Professor Münsterberg.

The sessions were well attended, but there was not as much discussion as at other meetings. The following papers were read:

Knowledge as the Subject of Epistemology: WALTER T. MARVIN.

The subject of epistemology is knowledge completely rationalized, which is never a concrete psychosis, but which does exist as an element in some psychoses. A complete list of concrete instances of cognition would include psychoses all the way from dawning intelligence to reasoning. In the higher instances, analysis would reveal three distinct elements: first, a non-rational element, an element of invention or discovery; secondly, a rational, a reflective, a cautious or conservative element, an awareness of the judgment involved and an inhibitant of any tendency to go beyond the warranted; thirdly, an awareness that our knowledge is about to result in conduct. The first and third of these elements are non-rational. This leaves the second element alone a truly rational element. Its office is to narrow down the field of risk in both the foregoing elements. It can help us to discovery only by preventing us from going far afield, by keeping our hypotheses within the limits that promise success. It can verify our hypotheses by ascertaining whether or not they have worked. A study of this rational element shows that it is engaged only with present data. It is the struggle of the mind towards complete rationality that alone may be called valid or invalid, and that forms the true subject of epistemological study.

The Something in Thought Besides Idea: EDWARD S. STEELE.

The most obtrusive symbol of thought is that of image, or picture, *i. e.*, of idea; but a second more fundamental symbol is that afforded by language, in which thought appears as discourse. Both of these points of view must be harmonized in any adequate theory. The common logic seems to cover both, but difficulties arise in its psychological application. By Locke ideas are placed outside of perception as its objects. Hume abolishes the perception and leaves only the ideas, thus excluding the logical function. Reid restores ideas to their place inside the act of predication, both elsewhere and in sense perception, and thus practically makes the judgment the universal norm of thought. A predication contains ideas and something extra-ideal—the latter the goal of the paper. Dr. James recognizes under the term, 'psychic fringe,' an extra-ideal element in consciousness corresponding, in part at least, to the logical element. The extra-ideal factor, according to this paper, consists in what is known as 'logical form.' Logical form is exhibited in certain uniformities of thought which run crosswise both of objective content and of psychological distinctions such as intuition and reflection. It is no physical determination, but part of the meaning of the thought, yet no part of the objective content; therefore describable as a subjective content, if thereby we understand a meaning merely for the thought process. The copula is the pivot of

logical form; no isolated item, but of a closed system of logical schematism. Logical content is merely of functional value and its ontological application is purely illusive.

The Growth of Concepts: GEORGE R. MONTGOMERY.

Concepts do not spring into consciousness through experience, nor are they fixed in their meaning. They are to be regarded as variables, functions one of another, in the sense in which calculus uses the word function. In calculus a number is not a magnitude but expresses a relation; therefore calculus is best fitted to represent the real characteristics of concepts, that is, the transitive states as well as the substantive. A concept is not a simple affair but a larger or smaller portion of the analytic-synthetic process which constitutes experience. The 'fringe' includes the parts into which the concept is analyzed and the whole a part of whose analysis the concept is. The epistemological unit is not, therefore, the sensation, nor the term or the proposition with the copula, but the analytic-synthetic triad; and the proposition with the copula is merely one leg of the analysis. A judgment like 'John struck James' or 'it rains' is an ordinary concept, and is thus to be regarded in grammar and logic.

Truth and Practice: A. E. TAYLOR.

The Metaphysical Status of Universals: WILMON H. SHELDON.

Whatever is concrete has a positive metaphysical reality, though perhaps not the highest degree of reality. The universal is supposed by many to be essentially not concrete and therefore to have a lower metaphysical status than concrete individual facts or events. This supposition rests on a misapprehension of the nature of a universal. It should be defined not as a permanent entity incapable of complete realization in experience and indifferent thereto, but as a particular image or response plus a fringe, a suggestion of further possible similar images or responses, which the former, having been associated with similars, gradually acquires. The suggestion is due not to our mind, but to the nature of the particular content; it is a concrete fringe of the image or response. Thus a universal is quite concrete, and is as real as any individual fact or event.

Kant's Doctrine of the Basis of Mathematics: JOSIAH ROYCE.

The certainty of mathematical science depends, according to Kant, entirely upon the necessity which our forms of perception possess, which forms are for us absolutely predetermined by our constitution. The mathematicians since the time of Kant have tended more and more to follow the very direction which he would have warned them not to follow. Namely, they have on the whole increasingly forsaken the method of trusting to perceptual con-

struction as a means of mathematical demonstration. Geometry without diagrams is now the order of the day amongst the most vigorous students of the bases of geometry. A Kantian form of intuition, if you can prove its existence in our own nature, has absolutely no interest as the foundation of any mathematical science, except in so far as it may suggest to some mathematician the particular ideal topics upon which he finds it convenient to build up a mathematical theory. On the other hand, the immortal soul of the Kantian doctrine of the forms of intuition remains this, that thinking itself is a kind of experience, that true thinking is synthetic as well as analytic, is engaged in construction of a peculiar kind, and not in mere barren analyses such as the statements that all rational animals are rational. Kant was right in saying that the novelties of mathematical science are due to the observation of the results of constructive processes. Kant's theory of the basis of mathematics has thus been in one respect wholly abandoned, and properly so, by the modern logic of mathematics. In another respect, precisely in so far as Kant declared that constructive synthesis and observation of its ideal results are both necessary for mathematics, Kant was unquestionably right. And, as nobody before him had so clearly seen this fact, and as the progress of mathematical logic since his time has been so profoundly influenced by his criticisms, we owe to him an enormous advance in our reflective insight in this field.

Kant's Attitude towards Idealism and Realism: EDWARD F. BUCHNER.

This paper discussed not the logical implication of Kant's system but his own notions of what idealism and realism taught in the eighteenth century. It sketched the successive interpretations of the 'Critique of Pure Reason,' from that of Garve, in 1782, to that of Schopenhauer. It gave a chronological list of passages from Kant's books and fragments under these headings: his conception of idealism and realism; his classification of idealists and realists; his own impressions of what he taught; his rejoinders to critics; his refutations of idealism. Much may thus be learned of his great motives. The conclusions reached were: (1) Kant's criticism of the extant forms of idealism and realism is due to ambiguity in his use of the terms 'external,' 'outside us,' 'experience,' etc. (2) Kant argues against Berkeleian idealism, first, from his doctrine of things-in-themselves, later, from the existence of things in space. His doctrine of *noumena* is vital in his system. (3) In 1787 and later, Kant's thinking shifted to psychological grounds, proceeding contradictorily to the Deduction and the Paralogisms. (4) Kant's real and apparent inconsistencies may be reconciled by noting that,

while as to experience and knowledge he taught a new idealism, as to faith he taught a new realism. Criticism thus was an articulation of ideal-realism and real idealism.

The Present Significance of Kant's Ethics: WILLIAM CALDWELL.

This significance is due, of course, to Kant's spiritual philosophy of human nature. This spiritual philosophy is implied in all present and recent attempts to treat the moral judgment as one of valuation. It is also implied in recent epistemological assumptions about personality, and it constitutes a basis for the theory of sovereignty or autonomy implied in the ethics of social democracy. Neo-Hegelian criticism of Kant's moral standard has overlooked the two more socialized expressions given to it by Kant. The independence of ethics both of metaphysics and of naturalism is an important part of Kant's teaching—the fact that ethics is more calculated to give to, than to take from metaphysics—the latter thing having been tried unsuccessfully by the English neo-Hegelians until the recent criticisms of Bradley and Taylor. Again, Kant's emphasis on the standard as the law of personal dealing in a social realm frees us from many of the difficulties of the much-vaunted *teleological* moral philosophy of the present, casuistry and indifferentism or indeterminateness being the faults of the latter. Kant's version of the standard is also the one that is most consonant with a true theory of moral progress.

The Significant and the Non-essential in the Æsthetics of Kant:
JAMES H. TUFTS.

Regarding as non-essential the arrangement under the categories, and the machinery of the separate faculties with their supposed interaction, we may single out as the more essential elements of Kant's thought the following: (1) The social reference implied in the æsthetic judgment. The æsthetic may be said to 'find me' more deeply and broadly than the agreeable. (2) The emphasis upon the freedom and the enlarging quality of the æsthetic consciousness. The æsthetic is thus distinguished both from the routine of habit and from the abstract concepts of scientific interest. (3) The recognition of the negative or tensional factor in the consciousness of the sublime. (4) The treatment of the æsthetic as an organic part of life and philosophy. It is fatal to the æsthetic to be abstracted from full experience, and conversely, philosophy, in seeking a point of view for considering life as a whole, can not ignore the æsthetic phases of consciousness as above indicated.

The Influence of Kant on Theology: GEORGE W. KNOX.

The influence of Kant on theology has been in three principal lines. First, certain theologians accepted the arguments of the

'Critique of the Pure Reason' and the conclusion that God is therefore unknowable. None the less they attempted a theology by exalting faith in revelation through the church and the Holy Scriptures, thus maintaining that that which is unknowable by reason may be accepted by faith. The second movement followed the lines laid down by Schleiermacher on the one side and Hegel on the other. Accepting the position of Kant as destructive of the old conception of God, they attempt to find him immanent in the world of feeling and of reason. Under the influence of Hegel theology was reconstructed, the central point being given to the doctrine of the Trinity, though this was stated in forms scarcely in accordance with the tradition of the church. The theology, however, suffered the fate of the philosophy and has now few representatives. The third movement may be called neo-Kantian, and it is often designated by the name Ritschl. Ritschl, however, obtained his epistemology through Lotze, though in his later period he made a renewed study of Kant, not perhaps altogether to the advantage of his system. This school holds theology to be a practical science, its relationship to metaphysics being only the relationship which all sciences must hold to it, and its material being given in the facts of the religious experience of mankind.

Kant and Aquinas (by title): BROTHER CHRYSOSTOM.

Five such centuries as separated Kant from Aquinas must have entailed a marked difference in point of view. Yet it is surprising how many points of contact may be found between the Angel of the Schools and the Philosopher of Königsberg. In the thirteenth century there were extremes to reconcile: in the world of action, we find the spiritual and the temporal; in the world of thought, nominalism and realism; in the theological world, Gentilism and Christianity. Thus the young Aquinas was forced to go back of differences to a common ground if he would construct a really effective *synthetic* philosophy. In the days of Kant, the conflict was supposed to be between dogmatism and skepticism, and Kant, too, went back to the parting of the ways to get the principles of his *analytic* philosophy. But his excessive distrust of the principle of authority, the solitary life which he led, and the mental rigidity which marks him off from even such mathematicians as Descartes and Spinoza, prevented him from giving his system a solid foundation in the real order. On the other hand, to exceptional natural gifts Aquinas joined the advantages of travel and of special instruction under one of the most learned men of the day; for Albertus Magnus united theory and practice, speculation and experiment. To the precision of the logician he added the skill of the poet and was therefore the possessor of sympathy and insight. A detailed

comparison of the limitations of our cognitive powers as viewed by both Kant and Aquinas brings out many more points of contact, and is a suggestive and profitable study.

The five papers following were read at the joint session with the American Psychological Association.

Wundtian Feeling: Analysis and the Genetic Significance of Feeling: MARGARET FLOY WASHBURN.

The elaborate analysis of feelings which forms the most important part of Wundt's revised system of psychology is incompatible with his doctrine that feeling is purely subjective and based on the reaction of a simple apperception center. In particular, every attempt to explain the relation between a feeling quality and its components, or complex feeling and their partial feelings, results in referring the complexity to the sensational basis of the feeling. Analysis and subjectivity are incompatible notions. The chief source of perplexity in the problem of feeling lies in the failure to recognize intermediate stages between feeling and sensation; processes which, while they ordinarily go unanalyzed because there is no need for analyzing them, may with practiced introspection be recognized as complexes of organic sensation. To this class belong strain and relaxation, excitement and depression. Subjective is that which resists analysis, qualitative and local; objective, that which allows it. Only pleasantness and unpleasantness are ultimately subjective in this sense.

The Mutual Isolation of Minds: DICKINSON S. MILLER.

Consciousness as distinct from its contents resolves itself into a relation of coexperience or empirical conjunction between contents. Contents not bearing this relation to each other are isolated in an ultimate sense. A group of coexperienced contents which as a whole is isolated is what we call a state or field of consciousness. To it every other state or field is, in Clifford's term, ejective. The disjunction of experiences is absolute and admits of no degrees. The same may be said of their conjunction. A consciousness foreign to my own is for me a 'thing-in-itself.' To say that we can know nothing of things-in-themselves is to say that we can know nothing of our neighbor's mind. To say that one content can be in two fields at once, or that a field may be a part of a larger field without consciousness of the fact is to contradict oneself. The absolute discontinuity between fields of consciousness must be recognized by such doctrines of panpsychism as would transfer the continuities of the physical world of science to a world of sentience. The category of ejectivity or disjunction is of peculiar interest for the theory of knowledge. It is the fixed indisposition to contemplate

the content of a conceived foreign field as part of my own conceived field.

The Nature of Consciousness: FREDERICK J. E. WOODBRIDGE.

Consciousness can not be defined in isolation, but only as it is given with a variety of contents as different as ideas and things, as an instance of that type of existence which may be described as the existence of different things together. Space, time and species are other instances of the same type, and afford such striking parallels to consciousness that consciousness may be defined as of the same general nature, namely, as a form of continuum or connection between objects. Such a definition reduces the problem of the relation of consciousness to other things to the problem of the relation of a continuum to the things contained. The distinctive feature of the connection of objects in consciousness is that in such connection they become representative of each other, and thus make knowledge possible. It is to be noted that both the actual contents and limitations of knowledge are determined solely by the relation of objects to each other. Knowledge is palpably realistic. The most crucial instance of this realism is the discovery that consciousness has antecedent conditions of existence. These conditions appear to be events of the world which is eventually in consciousness, so that consciousness may be regarded as a special form of continuum or connection in which the events of the world may exist.

A Suggestive Case of Nerve Anastomosis: GEORGE TRUMBULL LADD.

This particular case of nerve anastomosis was performed by Dr. Harvey Cushing, of Baltimore, in the spring of 1902. It consisted of uniting the distal end of the facial nerve with the central end of the accessory nerve of the shoulder. Through persistent efforts at voluntary control during 287 days, at the end of this period the action of the individual groups of muscles of the face had completely returned and could be effected without associated movements of the shoulder or contraction in other facial muscles, and emotional expression had considerably improved, although not to the same extent. An analysis of the phenomena seems to show that, under the stimulus of will, the cortical center of the accessory nerve had assumed new and more complicated functions. Such astonishing results from persistent volitional efforts seem to add their testimony to scores of other facts in discrediting both the idealistic and the psycho-physical parallelistic theories of the relations of body and mind.

The System of Values: HUGO MÜNSTERBERG.

The aim is to classify our absolute values; those experiences, that is, which we appreciate for their own sake, and secondly to examine

whether one common principle controls the whole system. If we seek absolute values, we must take the standpoint of immediate experience and not the standpoint of causal science, which is itself the product of valuation, inasmuch as it has transformed reality in the service of certain valuable logical purposes. We find values in four spheres: firstly, in related experiences; secondly, in isolated experiences; thirdly, in the changes of experience; and fourthly, in the supplementations of experience. Each time we have to separate the given and the created values. In the related experiences we find the value of validity, to which we submit; it is given as existential knowledge and created as scientific knowledge. In isolated experiences we find the value of perfection, which we enjoy; it is given in harmony and created in beauty of art. In the changes of experiences we find the value of achievement, which we approve; it is given as development and created as civilization. In the supplementations to experience we find the value of completeness, in which we believe; it is given as religious conviction and created as philosophical conviction. There is one category common to all these classes of values: the category of identity. As the same simple principle of attraction controls the changes of the physical world from the falling apple to the moving star, the same simple principle of identity determines value in the world of subjects from the beauty of a circle or the truth of arithmetic to the highest morality and philosophy and religion.

Consciousness in the Brutes: GEORGE V. N. DEARBORN.

The presumption that the nervous system is the physical basis of consciousness is unwarranted (as was Descartes's location of the soul in the pineal gland) because the metabolism of the nervous system is inadequate to the empirical nature of the mental process. On the other hand the unique complexity of the structure and the metabolism of protoplasm in general corresponds more nearly to the intensity and the extensity of empirical consciousness. The nearly perfect analogy between the anatomy and the physiology of man and those of the most complex brutes amounts to a demonstration of the latter's consciousness, while the principle of continuity warrants a belief that all animals are conscious, the simplest experiencing little but sensation and 'will,' while cognition develops probably with the comprehending functions of the nervous system.

The Psychological Self and the Actual Personality: J. A. LEIGHTON.

There is a deeper and more fundamental method of considering the actual self than any afforded by psychology. Structural psychology must, in its analytic procedure, treat consciousness as a complex of static, given elements so that it could never lay hold on the actual, living self which is immediately experienced as a moving

and dynamic unity. The actual self remains always the limiting presupposition of structural analysis. Functional psychology endeavors to do justice to the prospective, teleological character of the self-unity. But it has tended to rest satisfied with biological categories and has not seen that its genetic account of self-activity as end-seeking involves a philosophy, *i. e.*, a theory of the relation of self to environment. The actual personality realizes itself as a rational, teleological activity only in and through *culture-systems* in morals, science, religion, etc. The real self finds itself through active attitudes in relation to the totality of the culture-life. This life is historical, social, spiritual. It is created, embodied and transformed in and by personalities. The transcendent presupposition, then, of the entire culture-life is the reality of ultimate self-active, spiritual unities which come to expression in empirical individuals. If we ask, not what is the presupposition of exact science, but what is the presupposition of human culture, we are led back to a hyper-empirical principle in personality, and so, widening the transcendental inquiry, we shall arrive, not at a *Bewusstsein überhaupt* as the ultimate condition of science, but at a transcendent principle of personality as the condition of civilization.

The Relational Theory of Consciousness: W. P. MONTAGUE.

The new movement in favor of a relational theory of consciousness is to be welcomed in the interest of a scientific psychology. It is however seriously hampered by a failure on the part of most of its advocates to realize the incompatibility of any form of idealism with the view that consciousness is a relation between its objects, and not something in which they inhere. Things must be before they can be related, hence if consciousness is a relation no object can depend for its existence upon the fact that it is perceived. In short the realistic theory of the world is a necessary implication of the relational theory of consciousness; while, conversely, if we follow common sense in admitting the objective reality of both primary and secondary qualities, there will be no temptation to treat consciousness as anything other than a special relation between an organism and its environment. Realism and the relational view of consciousness are strictly correlative. They are different aspects of the same truth, and can not be defended or understood apart from one another.

An Interpretation of Aristotle, De anima III., 7, 431 a 16-b 1: WM. ROMAINE NEWBOLD.

Chapters four to eight of this book are occupied by the Theory of Reason. This paragraph is not, as is commonly supposed, a digression, repeating the theory already given of the simultaneous

perception of disparate sense presentations. It is essentially an application of that theory to the simultaneous apprehension of the intuition of Reason and some other content. In it Aristotle makes four points: (1) The intuition of Reason always occurs in conjunction with a representation of phantasy. (2) The mental content whereby we apprehend *that in which* the representations differ itself contains the intuitions or concepts of both. (3) The manner in which the two intuitions and (4) the representation and its intuition are simultaneously apprehended, is proved by proportions. These proportions should be interpreted in accordance with the principle upon which convertibility rests. The latter was certainly known to Aristotle; it was probably the discovery of Eudoxus.

Primary and Secondary Phases of Causality. Natural Science Founded on the Latter and Theology on the Former: WILLIAM T. HARRIS.

In our common thinking we are apt to suppose that a chain of secondary causality can be thought by itself without the need of a first cause; but this view does not bear examination, for any link which originated causality would in so far have to be a first or primordial cause not deriving that causality from beyond, but, through its own energy, generating a transmitting cause. It follows that all secondary causes belong to the pole of the effect. An infinite effect presupposes an infinite cause which originates an infinite causal influence transmitted to this infinite sphere of effect. Suppose that the infinite chain of secondary causes does *not* demand as its logical condition a first cause which originates its causal energy and is not dependent itself upon a chain of causality. In that case there is no causality to transmit. No link originates any causality to transmit, and causality according to this view comes from no other source. This is the annihilation of all causality because there is no origination, and consequently there can be no transference, of causality. Science, as well as philosophy, with this becomes an illusion, and things and events also become illusions because they only *seem* to arise through a transforming causal influence in the world.

The Agnosticism of Herbert Spencer (by title): GABRIEL CAMPBELL.

Herbert Spencer was by heredity a nonconformist, his father even dissenting from the dissenters, the son displaying an impulsive antipathy to authority, political as well as religious, expressions of adoration never finding in him any echoes. Bodily infirmity prevented his attending school and devoting himself to books; he was thus debarred from becoming a scholar in philosophy or an expert in science. Mentally a castle-builder, with the ambition of a re-

former, his copious writings are sagely devised, but impracticable. He early championed evolutionism, aiming to displace a sovereign ruler who is creative or self-revealing. Characterizing the absolute reality as unknowable, he passes mechanically from the biological to the psychological. The emotive life is developed from the corporeal; intuitions fail to give men absolute ideals; irreversible law excludes freedom of will. In his theory of education he ignores the study of humanity in its higher ranges, the classic development of language, art, ethics and religion. His absolute morality would be intermediary between empiricism and idealism, but does not bring man into free affiliation with a divine (Kantian) kingdom of righteousness. In religion Spencer recognizes rather the utilitarian animal than the immortal; the savage state seems more suggestive than Christianity. While he finds religion indispensable and based on our consciousness of the infinite and eternal source of all energy, his theistic ideas are incoherent, God unknowable; Spencer does not find our highest and best intellection developed in terms of the absolutely real.

Deism in America: I. WOODBRIDGE RILEY.

Confining itself to the rise of deism in Yale College, the paper discusses the deistic influences in the writings of Bishop Berkeley, Dr. Samuel Johnson, Rector Clapp and President Stiles. The latter's reading of Shaftsbury, Leland, Middleton, Hume and Lord Kames is shown to have incited Stiles's remarkable appeal for freedom of thought, now first given in its entirety from hitherto unpublished documents.

Philosophy and Immortality: FRANK S. HOFFMANN.

The doctrine of human immortality is now seriously questioned. Being a future event it can never be more than probable. Even if it could be shown that some men have survived death, that would not prove that all will. A study of the origin and nature of man, developing into a being capable of knowing himself and investigating the ultimate ground of things, creates a probability in favor of his endless life. The argument against this view derived from the known interdependence of mind and brain is nullified by accepting the transmission theory of James as more likely than the production theory of Duhring, or the combination theory of Clifford. The probability of human immortality is further increased when we consider the plan or purpose that the universe manifests. If to the two great facts of the material universe, the indestructibility of matter and the conservation of physical energy, we add the conservation of personality, the harmony of the system of things as a whole is put upon solid ground. Grant the absolute goodness of

God, and the endless life of man seems to follow as a necessary corollary. It would be unworthy of God to annihilate man almost as he begins the use of his higher powers. Life and immortality are brought to light just in proportion as man comes to realize his own dignity and to put a correct estimate upon his own worth.

Gambling as Play: Its Nature and the Moral Character of It:

HERBERT G. LORD.

This discussion originated in the attempt to define precisely what constitutes gambling. The objective mark is found to lie not in the presence of chance nor even in an excess of it, since this is characteristic of many other of the transactions of life; but in that the stake is provided by the contestants, and what one gains others lose. So in all gambling it is, and is meant to be. The subjective mark lies in the invariable presence of two impulses, the strife and the gain impulses. Other elements might or might not be present; these always are, though in varying degrees of intensity. This definition made, several different types of gambling were found, only two of which were distinguished from each other: gambling as play, and gambling as business. No well-grounded basis for condemnation of the former was found, when conducted under proper conditions and with a right mental attitude. It may, perhaps, even be both a healthful recreation and a method of gaining control of very insistent impulses.

Remarks on Ethical Method: HENRY W. WRIGHT.

The concept of evolution when applied to morality promises to be helpful in reconciling the conflicting claims of Hedonism and Intuitionism. From the evolutionary view-point, moral development appears as a process of organization governed by the laws of differentiation and integration. Thus, on the one hand, moral development has underlying unity despite its continuous change. We find a characteristic manifestation of this unity in *purposive* or *voluntary activity*, an activity which pervades the whole sphere of morality and is a mark of its real identity. Furthermore, purposive activity embraces elements of cognition, feeling and effort, and is itself an organizing agency inasmuch as it adjusts new objects to the systematic totality of individual life. But, on the other hand, moral development presents continuous difference within its essential unity. These changes, which the unitary principle undergoes, are largely determined by the nature of the evolution, as the process whereby a specific material (*i. e.*, primitive conduct) is organized. Hence we expect to find in morality different forms of purposive activity which are recognized as necessary stages or moments in moral development. Such are the common ad-

mitted virtues. We may distinguish three forms of purposive activity which are necessary stages in moral development. These forms of action are directed to the pursuit of (1) the single object of impulse, (2) total individual interest, and (3) social welfare. In (2) the virtues of *Temperance* and *Prudence* are involved; in (3) those of *Justice* and *Benevolence*.

Stages of the Discussion of Evolutionary Ethics: THEODORE DE LAGUNA.

During the last half-century the leading issues of this discussion have changed repeatedly. Until comparatively recently the bearing upon ethics of the theory of organic evolution received most attention; but since social evolution has been shown to be essentially peculiar in its laws and factors, the importance of biological conceptions and analogies in the consideration of moral facts has become evident. In the earlier (biological) period of the discussion, three stages can be distinguished. The first is that of ethics *versus* evolution; an incompatibility asserted both by opponents of evolution and by moral sceptics. The second is that of the imitational ethics criticized by Huxley; according to which the laws of organic evolution are a standard for moral conduct. The third is that of the systems of Spencer, Stephen and their allies, who explain morality as essentially a biological variation which more effectually secures the ends of previously existing functions. More recently a tendency has become marked to concentrate attention—even within the field of social evolution—upon the specifically ethical rather than upon ethiconomic factors. Questions of method are now paramount. Those who deny the applicability of the genetic method to ethics sometimes confuse present with earlier stages; sometimes ignore the light which, when the past is interpreted in terms of the present, may thereby shine on the present itself.

Is There a Distinct Logic of Historical Construction? PERCY HUGHES.

No concept of historical construction is in common acceptance; and that of action is proposed. The constructive historian presents a synthesis of many actions in the one they constitute, which synthesis, in turn, is at the same time a means of added activity in the parts. Hence in historical, as contrasted with mechanical causation, the parts explain the whole only by presupposing it, that is, as parts of it. For history seeks appreciation, not control. To recognize this concept is to see in the teaching of history primarily the presentation of those greater agencies in which each man has a part, as nature, the nation, civilization, or humanity; and to extend the scope of historical construction, so that man's place in other than

merely social movements can be recognized; while such lines of development as the economic, the social, the political, which at present lack definition, will be defined in terms of their direction, and will be compared, not as now in terms of causation, but through evaluation.

Methods of Studying the History of Philosophy (by title): J. MACBRIDE STERRETT.

Definition and function of philosophy in contrast with, and fulfillment of, that of science. Relation of the history of philosophy to philosophy. Organic view—the work of the same mind through the ages on the problem of the constitutive principle of all experience. The value of the study depends upon the method employed, as well as upon one's conception of the nature and function of philosophy. Two opposing dicta—(1) Each system refutes the preceding one so that there is no result. (2) No system of philosophy has ever been refuted. The organic view holds the latter doctrine. One system annuls another only by fulfilling it and reducing it to an organic factor of a more concrete view. Methods: (1) The *biographical* method—The personality of the thinker is of no philosophical interest. (2) The merely historical or learned method—Plato taught this, Aristotle taught that. (3) The merely sceptical method. (4) The eclectic method—A thesaurus of doctrines. (5) The *tendenz* method—Lewes rather than Hegel for illustration. (6) The modern historical method—Put yourself in the environment with Plato. (7) The critical method—the dialectic of development. (8) The philosophical method—Hegel as type in contrast with Lewes. The living organic view *vs.* the mortuary one—a sequence of funerals of systems with cosmic suicide of thought at its close.

NOTES AND NEWS

THE color-equations worked out in my *Experimental Psychology* were made with the Wundt papers supplied by E. Zimmermann. The series consisted of twelve colors, besides black and white. I chose these coated papers, in preference to the Hering tissue papers, because I had found in practice that they were much more durable.

I had no reason, at the time, to suppose that this set of papers would be changed. A consignment received from Zimmermann last spring consisted, however, partly of the original coated papers and partly of Hering tissue papers. A mixed series of this sort is, of course, very unsatisfactory for laboratory work. Herr Zimmermann has given me no explanation of the change. Since it is possible that similar mixed series may be sent to other psychologists, it seems worth while to say that my

equations hold, not for the new, but only for the original Zimmermann papers.

I have recently seen samples of a new set of coated papers, which Rothe is selling in place of the Hering tissue papers. There are twelve colors, with a black and a baryta white, and they appear to form a very even set. Whether the Hering velvet black can still be obtained I do not know; it is a black that one would be sorry to lose, although it fades so quickly that one can hardly employ it in ordinary laboratory practice. I have advised the C. H. Stoelting Company of Chicago (successor to the Chicago Laboratory Supply and Scale Company) to import these new Hering papers. Samples can be obtained now, and the papers will probably be on sale in a few weeks.

E. B. TITCHENER.

CORNELL UNIVERSITY.

THE Southern Society for Philosophy and Psychology held its first annual meeting on December 27-29, 1904. A session of the Society was held at Johns Hopkins University, Baltimore, Md., on December 27 with the following program: 'The Poggendorff Illusion,' W. M. STEELE; 'Influence of Secondary Stimuli in certain Complex Perceptions,' HAYWOOD J. PEARCE; 'Some Oddities of Sensory Discrimination and Memory,' G. M. STRATTON; 'The Meaning of Analysis in Psychology,' EDWARD A. PACE; 'The Introspective Method,' J. W. BAIRD; 'A Comparative Study of Religious Systems,' D. B. PURINTON; 'Philosophy as Developed according to the Tendencies of the American Mind,' GEORGE L. RAYMOND; Address by the President, J. MARK BALDWIN. The session then adjourned to Philadelphia, where it held a joint meeting with the American Philosophical Association in commemoration of the centenary of the death of Immanuel Kant.

As already announced in this JOURNAL, the Fifth International Congress of Psychology will meet at Rome, April 26-30, 1905. Professor Luigi Luciani, as honorary president, Professor Giuseppe Sergi, as president, Professor Augusto Tamburini, as general secretary, Professor Sante De Sanctis, as vice-secretary general, Dr. G. C. Ferrari, as assistant secretary, and Dr. Giovanni Luccio, as treasurer, constitute the executive committee of the congress. The sectional presidents are as follows: experimental psychology, Professor G. Fano; introspective psychology, Professor R. Ardigo; pathological psychology, Professor E. Morselli; criminal, pedagogical and social psychology, Professor C. Lombroso. American psychologists are represented on the International Committee by Professors Baldwin, Hall, James, Ladd, Münsterberg and Titchener. For information relative to the organization and work of the congress, Professor Sante De Sanctis should be addressed at Istituto fisiologico, 92 Via Depretis, Rome. Members of the International Committee may also be addressed and are authorized to receive applications for membership in the congress.

At the recent Philadelphia meeting of the American Society of Naturalists, Professor William James, of Harvard University, was elected president.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE THIRTEENTH ANNUAL MEETING OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

REPORT OF THE SECRETARY

THE thirteenth annual meeting of the American Psychological Association was held at the University of Pennsylvania, Philadelphia, on Wednesday, Thursday and Friday, December 28, 29 and 30, 1904, in affiliation with the American Association for the Advancement of Science and the American Society of Naturalists. President William James was in the chair at the various sessions. On the morning of Thursday, the 29th, the association met in joint session with the American Philosophical Association; and in the evening of that day the two societies held a smoker at the Colonnade Hotel. The meeting adjourned on Friday afternoon after a vote of thanks for the courtesy and hospitality shown by the representatives of the University of Pennsylvania. At the regular business meeting held on December 29, the following was transacted. Election of officers for 1905: *President*, Professor Mary Whiton Calkins, Wellesley College; *Secretary and Treasurer*, Mr. William Harper Davis, Lehigh University; *Members of the Council to serve for three years*, Professor Lightner Witmer, University of Pennsylvania, and Professor George M. Stratton, Johns Hopkins University. The following new members were elected: Dr. J. W. Baird, Johns Hopkins University; Professor I. Madison Bentley, Cornell University; Mr. Frank G. Bruner, Columbia University; Mr. C. T. Burnett, Bowdoin College; Mr. G. Cutler Fracker, Columbia University; Mr. V. A. C. Henmon, Columbia University; Dr. Edwin B. Holt, Harvard University; Professor Herbert G. Lord, Columbia University; Professor David R. Major, Ohio State University; Dr. W. P. Montague, Columbia University; Professor George R. Montgomery, Carleton College; Dr. Kathleen Carter Moore, 206 North 33d Street, Philadelphia; Professor Colin A. Scott, Boston Normal School; Mr. Luther A. Weigle, Yale University; Dr. William Morton Wheeler, American Museum of Natural History, New York City; Professor

F. J. E. Woodbridge, Columbia University; Dr. Robert M. Yerkes, Harvard University.

Upon recommendation of the Council, Article IV. of the Constitution was amended to read as follows: Annual Subscription—The annual subscription shall be one dollar in advance.

Upon recommendation of the Council it was voted that two dollars of the annual subscription of each member for the year 1905 be remitted.

The Council reported an invitation from Harvard University to hold the next annual meeting in Cambridge to signalize the opening of Emerson Hall. Upon recommendation of the Council it was voted that this invitation be accepted, power being given to the Council to arrange otherwise in case circumstances might arise to make a change of plan desirable.

The report of the Committee on Bibliography which was presented at the annual meeting in St. Louis, in December, 1903, and laid upon the table, was taken up, discussed and referred back to the committee for a further report at the annual meeting of 1905.

A vote of thanks to the retiring Secretary was moved and adopted.

REPORT OF THE TREASURER FOR 1904.

<i>Dr.</i>		
To balance at last meeting.....	\$2,013.02	
Dues of members.....	423.	
		<hr/> \$2,436.02
<i>Cr.</i>		
By expenditures for		
Printing	\$ 25.30	
Postage	20.50	
Stationery	3.70	
Clerical Assistance	35.	
Telegram25	
Exchange	1.20	
		<hr/> 85.95
		<hr/> \$2,350.07
Accumulated interest on deposits, approximate.....	320.	
		<hr/> \$2,670.07

LIVINGSTON FARRAND,
Secretary and Treasurer.

ABSTRACTS OF PAPERS

The Experience of Activity. *President's Address:* WILLIAM JAMES.

As contrasted with inactivity, we have activity whenever we experience anything to happen. The word is here synonymous with process or event. Where a process has a direction and tendency,

overcomes resistances, etc., we have activity in the completest sense. The notions of agent, effort, passivity, etc., arise in such experiences. The *nature* of activity is wholly given in the experience of it, just as every other elementary nature is similarly given. An activity-series is defined by its whence and whither. But activity-situation is a segment in a longer experience chain; and the more previous activity that gave the push, and the remoter goal that names the whither, are often substituted, as defining a *more real* activity for the activity at first supposed. Our conscious activity-experiences are moreover proved to depend on neural activities of which we are unconscious; and these, since their failure will arrest the others, are in turn considered more real. Thus our immediate feeling of an activity going on may be deceptive as to *whose and what* the activity really is, and we have to define and locate it elsewhere than where it first appeared. But in its new situation, it preserves the old nature, for the word activity can have no other meaning than what experience gives. We place all sorts of other things (as motions, sizes, colors, etc.) wrongly, but our need of translocating them does not expel their natures from the real world; and similarly an activity, to whatever more real source imputed, must either remain in the world as the same *kind* of thing we were originally talking about, or else be talked about under some other name. The fact that activity-experiences of our own may involve or be involved in more real activities, has led some writers to draw a sharp opposition between activity as humanly felt, and activity as an objective fact. They have different natures altogether, we are told, felt activity being an inert resultant and illusion, real activity being an efficacious force. But empiricism should reject this search for a trans-empirical 'activity-in-itself.' Who so feels himself sustaining a tendency against a resistance knows the *what* of activity through and through, and from within. There are other whats in the world, but of other 'activity' we have no right to speak. That activity, moreover, when once rightly located, possesses all the efficaciousness that can anywhere positively be supposed. A tendency successfully sustained against resistance is the original of what we mean by efficacy. Other idea of efficacy than that, we have none. To seek deeper than all experiences for what makes experience *really so* is thus a fallacy. The problems of activity are practical, not metaphysical. Which activities, and whose, are the more real activities in the actual world?—these are the important questions, leading, on the one hand, to a forecast of remoter outcomes, and on the other, to a more exact study of the relations of our *naïf* human experiences of activity to the short-span activities, whether neural or conscious, for which they seem to be substitutes.

Unperceivable States of Consciousness: A. H. PIERCE.

The doctrine of unperceivable sensations and sensation-differences has drawn its vitality for the most part from an argument which makes use of the axiom, if two things are equal to a third thing, they are equal to each other. Stumpf and Stout may be taken as representative advocates of this argument. In experimenting with slightly differing sensations, it frequently happens that two qualities or two intensities seem equal to a third whose stimulus lies midway between those of the other two, while the two sensations themselves are clearly distinguishable. This could not happen, the argument claims, unless the three sensations were actually different, for otherwise the above axiom of equality would be violated. Against this argument it may be urged that whenever the equality-axiom is employed outside of mathematics, its correct statement should be,—two things equal to a third under certain conditions are equal to each other *provided that the same conditions still prevail*. It is this continuance of underlying conditions that we are unable to guarantee when the comparison of sensations is in question. Indeed it seems not unlikely that the cerebral excitations caused by two closely similar stimuli exert upon each other a modifying influence, which is wanting when the difference between the stimuli is increased. Though lacking positive knowledge in the matter, should we not hesitate to base an argument upon the equality-axiom? For it is quite possible that the two sensations are compared with a third, under conditions that do not hold good when the two are compared with each other.

A Field for the Study of Temperament: DICKINSON S. MILLER.

The temperament of authors as traced, not through biographical gossip, but in their writings, proves a fruitful field for study. This is illustrated by the case of two contrasted types of temperament, the classic and the romantic. Five different bases of distinction and consequent definitions have been proposed by literary critics. If we combine these, we see the two types well marked and complete, and looking closer, the psychological basis of the difference. The romantic temperament is marked by an excitable energy that enjoys its excitement; the classic by evenly inhibited energies. Another illustration is found in two curiously contrasted individuals, both of the romantic type, who have evinced an antipathy for each other: Carlyle and Mr. Swinburne. Carlyle's imaginations are characterized by a passion for sensation of the kinesthetic order that accompanies the overcoming of resistance; Mr. Swinburne's by a passion for sensation of a diffused dermal and organic type, such as accompanies exultant movement through unresisting or but slightly

resisting media. This divergence goes far to explain the difference of their attitude toward the concrete and the abstract, toward pleasure, and toward liberty.

Examinations, Grades and Credits: J. McKEEN CATTELL.

This paper is published in full in the February number of the *Popular Science Monthly*.

Perception of Children: WILL S. MONROE.

Tests of Growth of Mental Efficiency in Children (by title): E. A. KIRKPATRICK.

The six hundred children of the Model and Practice schools are tested every year. The report was upon a perception-motor test of making one hundred marks in fifty squares in which the figures 1, 2 and 3 indicated the number to be made in each square. Very backward children are quickly discovered by the test in the lower grades and there is some reason to believe that the test is valuable as a means of measuring the mental efficiency of younger children at least. Improvement is shown by years and by grades, especially in the lower grades. The effects of the test seem to carry over long intervals, as most of the younger children at least are better in the second and third test given after six months or a year than children of corresponding ages who are taking their first test. Improvement with special practice is very marked, as was shown by a series of experiments on normal students, a girl of seven and a boy of five, the gain after ten trials being 18 per cent., 20 per cent. and 25 per cent., respectively. By practicing four times a day, for a week, the time of the little girl of seven was reduced from 64 to 43 seconds (41 is the average for girls of 14). Two weeks more brought it down to 35, and two weeks more to 30. The daily record was more variable than for adults, indicating that the elements of desire, and the power of self-direction, are important and variable factors in experiments upon children. It also appears that, in the case of children at least, errors are more likely to vary inversely than directly with increase in speed. Further tests will be made to determine the relation of this test, and improvement with practice in it, to other tests and to general mental efficiency.

Mental and Moral Effects Following the Removal of Adenoids: EDWARD A. HUNTINGTON.

Three cases were presented which had been prepared in connection with his Psychological Clinic conducted by Professor Witmer at the University of Pennsylvania. These cases were offered as a contribution to the clinical psychology of mental and moral retarda-

tion and deficiency. In all the cases, there was a history of mental and moral retardation, and in two cases this was associated with marked physical degeneracy. Naso-pharyngeal adenoids and hypertrophied tonsils were present in each case. The surgical removal of growths and hypertrophic tissues, followed by appropriate school training, resulted in mental and moral improvement. The most striking case was a boy whose mental status was that of a middle-grade imbecile, upon entering Special School No. 3, of which Mr. Huntington is principal. His pedagogical history showed that for three years in which he had been a pupil in the first grade of an elementary school, four different teachers had attempted his instruction and discipline, and each had failed in turn. He was finally expelled and sent to the Special School. Here he was accorded medical treatment, and adequate school training. One year after the removal of the growth, the child was promoted into the work of the second year, and it now seems safe to predict that his future progress will be steady and reasonably rapid.

Emotion and Motor-Sensations in Art: COLIN A. SCOTT.

The fact that the space of consciousness is limited results in a part only of any whole reaction coming to consciousness at any one time. Every reaction is primarily adaptive, but situations occur in which the stimulus arising directly from the reaction is not sufficient to fill the span of consciousness and maintain the scene of a full and abounding life. Lack of interest, pain or ennui results. At this point, however, play or art may save the situation and fill the remainder of the space of consciousness with either perceptual or ideational elements, which do not increase or aid in the adaptive reaction. These form the esthetic or play component. The esthetic reaction is thus never pure, but is always the by-product of some actual adaptive reaction reduced to a minimum. The exploitation of a figure by the movement of the eyes in painting is a part of the adaptive component, and in itself not esthetic. The physical movements in dancing are the reduced minimum of the adaptive movements of walking or running. The sensations of sitting in one's seat and looking at the stage in a theatre represent the adaptive. In all such cases, the remainder of the span of consciousness is filled with what is distinctly felt as not aiding or hindering any adaptive reaction. The picture must have no grapes for the birds to pick. Although the drama may stimulate feelings of fear, these must not lead the audience to save themselves by flight. The adaptive component in each case thus acts as an inhibitive agent. This inhibition, however, is confined to action on the environment. Action on one's own body and ideas representing the body are fully

exploited in the esthetic reaction. In this direction, motor elements are stimulated and not inhibited. Since the elements of the esthetic reaction are motor states felt to be internal, a reverberation of part evolutionary instincts comes to be an important and characteristic feature. The breadth of these leads to extension in the form of esthetic logic, representing the trend of the emotion, which is ultimately governed by climax or success.

Knee-Jerks without Stimulation of the Patellar Tendon: EDWIN B. TWITMYER.

In normal individuals in whom the knee-jerk is readily obtainable, a movement of the opposite limb can usually be observed when only one tendon is tapped. This phenomenon can be satisfactorily explained only as a reflex action. The possibility of eliciting this response when the opposite tendon is struck raised the question whether or not knee-jerks could be elicited without the usual tap on either tendon, *i. e.*, by the activity of some other stimulus. The results of an extended series of experiments upon six subjects were reported. Knee-jerks without taps on the tendons were obtained from all the subjects after a large number of preliminary experiments had been performed, in which a bell was struck 150 σ before the blow fell on the tendons. These responses were not the result of voluntary effort on the part of the subject. Attempts to inhibit these kicks were wholly unsuccessful. The movement displayed the characteristic jerky or explosive appearance of the true knee-jerk. The relation between the extent of the kicks of the right and left legs corresponds with the results obtained when the tendons were struck. The relations between the extent of the initial kick out of the legs and the first secondary swing remain constant for each subject, whether the movement follows the blows on the tendons or whether it follows the sound of the bell alone. Preliminary experiments with both the tap of the bell and the blow on the tendons were necessary before kicks could be obtained; with the bell alone, the number varied from 150 to 230 trials. With an increase in the number of experiments performed, the regularity of response with the bell alone was greatly increased. The movement in question can be explained only in terms of reflex action. The afferent excitation must reach the cord at the level of the medulla, and then passes down to the second and third lumbar segment, in which the cell bodies of the afferent conduction paths are located. The repeated association of the functioning of the motor cells of the lumbar segment of the cord upon which the kick immediately depends, with the excitation of centers in the nuclei of the medulla connected with the auditory conduction path, has resulted in the development of

an unusual reflex arc. The results of the experiment furnish additional grounds for accepting the view of Erb and his followers as to the nature of the patellar tendon phenomena. No difference whatever is apparent in the character and extent of the movements with and without the blows on the tendons. The two movements differ only in the origin of the excitation and the spinal centers involved.

The Analysis of Reaction Movements: CHARLES H. JUDD.

This paper reported a qualitative, rather than quantitative study of reactions. By means of a suitable apparatus graphic records were secured of all phases of reaction movements. It was found that no reactor lifts his finger from the key in a simple movement. Sometimes the reaction proper comes at the end of a gradual upward or downward movement. Sometimes sudden movements or rhythmic series of movements precede the reaction movement. Sometimes, as Mr. G. W. Smith has already shown, the reactor makes a sudden downward movement before raising the finger. Many of these preliminary phases of reaction can be related to conscious processes, not merely, or chiefly, because they give rise to muscle sensations, but because they express the motor organization in the central nervous system which furnishes the physiological basis for the processes of attention and rising expectation. These processes of attention and expectation are not forms or phases of consciousness depending upon any sensation factors. Nor do they depend on revived content factors. They belong to the conative side of mental life, and are easily understood when it is shown, as in the results reported in this investigation, that there is a fact of nervous expressive activity paralleling each of the manifold variations of attention and expectation arising in reactions.

Some Experiments on Lifted Weights Looking Toward a Restatement of the Psycho-Physical Problem: LIGHTNER WITMER.

Standard weight 100 grams, comparison weights 100, 102, 104, 106 and 108 grams. Time of stimulation 1 second, 2 seconds interval between the periods of stimulation, no greater interval between two pairs of weights lifted than between the lift of each weight of a pair. Thus there was no chronological grouping. It took six seconds to lift each pair of weights, and to give a judgment as to whether the second weight was heavier or lighter than the first. A series, usually of 40 judgments, followed consecutively. The pairs of weights upon which judgment was given were 100:100, 108:100, 100:102, 100:104, 100:106, 102:100, 104:100, 106:100. The subjects were compelled to express a judgment even when the

judgment was a mere guess. Equality judgments were not allowed. In case the judgment was a mere guess the subject added 'D' meaning doubt. If his judgment was accompanied by a measurable degree of confidence he added 'A, B, or C.' The following table summarizes the results.

	H or L Cases.	Confidence.		Doubt.	
		Cases.	Right.	Cases.	Right.
100:100	65	59	61	41	71
100:102	67	62.5	66	37.5	70
104	77	66	80	34	75
106	86	69.5	86	30.5	85
Average	77	66	77	34	77
102:100	50	63	58	37	36
104:	56	62	66	38	41
106:	64	67	74	33	43
108:	66	65.5	69	34.5	53
Average	57	64	66	36	40

Each value in the table is the average result of 200 experiments each upon three different subjects. The table shows opposite each pair the percentage of the heavier or lighter cases from 600 experiments, also the percentage of cases given with confidence and with doubt, the percentage of confident cases that were right cases, and the percentage of doubtful cases that were right cases. Thus with the weights 102, 104 and 106 in the second position in a pair, 77 per cent. of the cases were right, 66 per cent. of all the cases were confident judgments, and 34 per cent. were doubtful judgments. Of the confident judgments 77 per cent. were right, while of the doubtful judgments the same number, 77 per cent., were right. With these comparison weights in the first position, but 57 per cent. of the cases were lighter or right cases. Of these cases 64 per cent. were confident judgments of which 66 per cent. were right. 36 per cent. were doubtful of which only 40 per cent. were right.

The Order of Tone Sensations: HUGO MÜNSTERBERG.

It seems improbable that a final theory will recognize six light sensations only, but demand ten thousand tone sensations; while to the naïve consciousness, the manifoldness of the visual and of the acoustical fields seems more or less comparable. This striking difference in the theoretical construction is the result of the historical fact that the visual theory has been developed without any reference to anatomical observations, while the theory of hearing has been brought from the beginning under anatomical categories. If we take introspection as our starting point we must consider as qualitative elements those characteristics of the sound which indicate to us the differences of the various sonorous objects. If I hear one

sound, I am interested to know merely whether it is sung or played on a piano, comes from violin or trumpet or bell or whistle. Like a color, such an element can change in intensity and can mix with toneless sounds, the noises. But each sound, just like a color, can change in a distance series where every position has meaning only with reference to another member of the series. The drawing has two such dimensions, right-left and up-down; the violin sonata has also two such dimensions, the time-dimension and the pitch-dimension. As the painting combines a number of colors, each one distributed in both dimensions; so the orchestra combines the variety of timbre elements, each varying in time and pitch. The ten thousand strings of the basilar membrane which give the change of pitch, correspond then to the ten thousand or more rods and cones which the light may successively stimulate in going up and down. The objective combination of tones in the simple timbre corresponds to the objective combination of colors in the white light, and the apparent subjective discrimination of overtones is not a real resolution of the clang into elements. The relation between the two tones of an octave or a fifth would then no more be compared with relations between colors, but with relations between the parts of a circle or an ellipse, while the harmony of different instruments would correspond to the harmony of different colors.

Combination Tones: F. M. URBAN.

In a clang composed of two tones, one can observe tones the pitches of which are in certain simple relations to the vibration number of the fundamental tones. One tone, which is called summation tone, corresponds to the sum of the vibrations; besides this there exists a tone with the pitch of the difference of the vibrations which forms with the other elements of the clang difference tones of higher order. Difference and summation tones are called combinational tones; the name of *Tartini's* or *Sorge's* tones is less fitting as these acousticians observed only difference tones of first order, the summation tones being observed first by Helmholtz. A merely physical explanation is sufficient for those combinational tones which can be observed in the air outside the ear. This is always possible for the summation tones—although they are so faint that some observers have not noticed them—but for the difference tones it is only possible when they are produced in the same enclosed space. According to this criterion we distinguish subjective and objective difference tones. Helmholtz has adopted the theory that the subjective difference tones have their origin in the ear and that they must arise whenever the vibrations are so large that the second power of the displacement can not be neglected besides the first. The mathe-

mathematical theory shows further that an elastic body can perform such a movement only if it has a form unsymmetrical to the direction of the vibration; the tympanum is considered to fulfill this requirement. This theory explains only difference tones of the first order but not those of higher order. The requirement of the vibration to have a certain magnitude is only partially justified, as difference tones can be heard most distinctly when the intensity of the fundamental tones does not exceed a certain limit, and is certainly not fulfilled for difference tones of higher order, the intensity of which decreases rapidly. The anatomical relation to the tympanum does not agree with the fact that difference tones can be heard after operative destruction of the tympanum and the ossicles. The insufficiency of Helmholtz's explanation is no proof against the resonance hypothesis, but first of all a new theory of hearing would have to consider the problem of difference tones.

The Sense of Hearing in Frogs: ROBERT M. YERKES.

(1) The green frog seldom gives a locomotor reaction in response to sounds, and thus far no characteristic auditory reflexes have been discovered. (2) That the animal hears is clear from the fact that croaking ceases when an auditory stimulus is suddenly given. (3) Experiments show that the reflex reaction to other stimuli, tactual for example, is modified by sounds. When the two stimuli occur simultaneously the reaction to the tactual stimulus is reinforced by the auditory; when the auditory stimulus precedes the tactual (this is possible because the auditory alone never causes a reaction) by more than three tenths of a second, the tactual reaction is partially inhibited. (4) The auditory stimulus modifies the tactual reaction whether the frog be in air or in water, but the influence is lessened as the animal is more and more deeply submerged. (5) Thus far experiments indicate that the range of hearing extends from fifty vibrations per second to at least 10,000. (6) Apparently, hearing is of less importance in the frog than vision. Sounds may serve as warnings of danger, but they do not bring about locomotor or flight reactions as do visual stimuli. (7) The tympanum is much larger in the male than in the female, and as might be expected there is some evidence that sounds produce more marked effects on the males than on the females.

Some Sex Differences: R. S. WOODWORTH and FRANK G. BRUNER.

In connection with the anthropometric work of the Department of Anthropology at the St. Louis Exposition, men and women of several races were subjected to sense, motor and mental tests. In the motor tests men surpassed women, though the difference in quickness

and in accuracy of movement was much less than in strength. In color perception, on the contrary, women surpassed, and this difference, like that in movement, held good in nearly every race and group examined. In visual acuity there was no uniform sex difference, for while white men saw better than white women, in most other groups the women surpassed. In a 'form test,' which consisted in fitting variously shaped blocks into corresponding holes, and which has proved to be more a test of intelligence than of perception of form, American men and women were about on an equality, whereas in the more primitive peoples the males were distinctly superior to the females.

Motor Correlations: R. S. WOODWORTH and H. D. MARSH.

American adults were tested in strength of grip, speed of tapping and accuracy of hand movement. A high degree of correlation (Pearson coefficient = $0.5 +$ to 0.82) obtained between the right and left hands of a person in the same test; but a low correlation (0.08 to 0.34) appeared between the different tests of the same hand. In other words, a person's efficiency with one hand in any motor function is a fair index of how well he can do with the other hand; but a person's efficiency in one motor function is scarcely any index of his efficiency in others. The use of the single term, 'motor ability of an individual,' to cover all sorts of motor functions, is therefore misleading.

Abstracts of the papers read by Margaret Floy Washburn on 'Wundtian Feeling Analysis and the Genetic Significance of Feeling'; Dickinson S. Miller, on 'The Mutual Isolation of Minds'; Frederick J. E. Woodbridge, on 'The Nature of Consciousness'; George Trumbull Ladd, on 'A Suggestive Case of Nerve Anastomosis'; and Hugo Münsterberg, on 'The System of Values,' have already appeared in the preceding number of this JOURNAL (Vol. II., No. 2, pp. 47-49).

The Time of Perception as a Measure of Difference in Sensations:
VIVIAN A. C. HENMON.

Differences in sensations are equal if they are discriminated with equal ease. A measure of the time necessary to perceive differences in sensations is therefore a measure of the differences themselves. In this way it is possible to discover with what differences for consciousness either relatively or absolutely equal objective differences in quality or intensity are correlated. Experiments on qualitative differences in color, equal intermediate steps between orange and red, show that with the equal decrease in differences between two pairs of stimuli goes a markedly greater increase in the differences in the

time of perception. The curve of increase agrees very well with that obtained by the usual psycho-physical methods. Experiments on the time of perceiving differences in lengths of lines, in which field Weber's law holds within certain limits, show on the application of Fechner's formula of difference that the differences in the times of perception increase inversely as the logarithms of the quotients of the magnitudes of the stimuli. Individual differences in sensibility and sense deficiencies can be determined by this method. If, for instance, a person be color-blind it will take him a longer time to distinguish the reds and greens than the blues and the yellows. To measure this cards were prepared on one set of which blues and yellows in various shades and tints were mounted, on the other reds and greens, and the time of distribution taken. The person of normal color-vision takes no longer to distribute the reds and greens than the blues and yellows, one deficient in color-sense takes much longer and thus discloses his defect.

Additional Experiments on the Photography of the Eye: G. M. STRATTON.

The experiments here reported were made with the eye viewing a great variety of figures, and the eye's action was mechanically recorded by photographing the movements of a beam of light reflected from the cornea. In addition to the fact that our enjoyment of linear gracefulness can not be attributed to any ease or grace in the eye's own motion—a result already reported in the Wundt *Festschrift*—the present experiments indicate: (1) That the Wundt-Lamansky law of eye-movements is by no means a universally valid formula. While horizontal movements are frequently along lines that are approximately straight, yet vertical movements are much less commonly straight. Diagonal movements frequently approximate the Wundt-Lamansky description, but straight diagonals are by no means rare. (2) The linear illusions of Müller-Lyer, Zöllner and Poggendorff frequently occur with exactly such eye-movements as have been supposed to be their cause. But the illusions also occur in the absence of such movements, and indeed when the very opposite kind of movement is being performed. Therefore any special form of eye-movement is evidently not a necessary condition of the rise of these illusions. (3) In viewing symmetrical figures, the eye's movements are usually unsymmetrical, at least when such figures are most enjoyed. The more symmetrical movements were called out when the observer was in doubt whether the figure was exactly symmetrical. Our enjoyment of symmetry accordingly can not be explained by the balance or pleasure in the eye movements which symmetry invites.

Intermittence of Vision: EDWIN B. HOLT.

The periodically spaced bandings observable on the after-image streak produced by a luminous image travelling on the retina can not be explained by the theory of retinal undulations advanced by Professor Auguste Charpentier. Professor Charpentier's observation, on which he bases his theory, that these bands become narrower and lie nearer together as the image moves more rapidly, is incorrect. The bands follow precisely the opposite law. Neither are these bands due, as has often been said, to the same mechanism as the recurring after-images seen after a momentary exposure of the eye to a stimulus that is not moving; for if they were they would necessarily travel after the moving stimulus, keeping at constant distances behind it. Whereas the bands do not move at all, although the system of bands, as a whole, moves because the rear band is always disappearing, while a new band is being deposited on the front of the system by the moving stimulus. The bands are due to some intermittence of the visual mechanism, whereby the nervous process set up by the moving stimulus is periodically inhibited, so that the stimulus instead of leaving behind it in consciousness a continuous after-image streak, leaves a discontinuous succession of after-images each one of which is of approximately its own size and shape. These several images behave like ordinary after-images: for an instant after their generation they become larger than the retinal image of the object should seem to warrant, and then grow gradually smaller in all dimensions and feebler in intensity, until they fade away. There is no reason for supposing this intermittence to be a function of the retina. Like the many other cases of periodic sensory inhibition it is more probably due to some process in the central nervous centers.

The Effect of Eccentric Visual Stimulation on Fixation: RAYMOND DODGE.

Replying to certain criticisms of his method of photographic registration of the eye movements, Mr. Dodge described the records of a photographic ophthalmometer. Besides constituting data of the most accurate sort for determining the shape of the cornea, these records indicated the importance of certain precautions in the photographic registration of the eye movements by means of the corneal reflection. Since at the extreme periphery the cornea is quite irregular, altogether the most favorable position for the corneal reflection is the optical axis of the cornea or points symmetrically disposed about it. A source of error which menaces alike all exact studies of the eye movements and many apparently unrelated fields of optics is given in the minute but almost continuous involuntary movements

of the eyes during so-called fixation. Photographic registration of these errors of fixation shows that, notwithstanding the most elaborate precautions, movements of the head had not been entirely eliminated. Besides the actual displacement of the eyes with the head, the recorded errors showed distinct coordinate compensatory eye movements, more or less exaggerated by the mechanical interference with the head movements. Abstracting from the influence of the head movements there remain marked irregularities in fixation. In one subject involuntary eye movements of unusual amplitude were found in the place of a hitherto undiagnosed astigmatism. The best known effects of eccentric stimulation constitute further disturbances of fixation. Notwithstanding the conviction, based on introspective data, that an eccentric point of interest may be maintained without occasioning actual eye movement, photographic registration showed in every case distinct and characteristic eye movements. Even when not attended to, eccentric stimuli increase the general instability of fixation whenever they notably diminish the clearness of the fixation mark. They may on the other hand serve a very different function. In certain definite relations to the point of fixation they reduce the amplitude of the involuntary eye movements. For all three subjects studied a dot was the most unsatisfactory fixation mark, permitting eye movements of the greatest amplitude with the conviction of accurate fixation. Equally unanimous was the effect of eccentric stimuli in the form of radiating lines. A line diminished the amplitude of transverse involuntary eye movement. The fixation of a line as a whole was less irregular than the attempt to fixate a definite point on the line. The results unequivocally condemn the usual point-like fixation mark, whenever even approximate fixation is required. They also furnish the clearest evidence that normal fixation is not a simple mechanical fact but a relatively complex functional process dependent primarily on the clearness of the visual image.

The Fixation of Points in the Visual Field: CLOYD N. McALLISTER.

This paper was a report on work done for the purpose of determining the behavior of the eye while fixating points. The observer was required to fixate a simple point for a short time, then move the eyes to the right through an angle of about 10 degrees, to another simple point or to a point from which lines were drawn. Several movements from the simple point to the point on the right and back to the simple point again were recorded for each observer. The records were made with an Edison kinetoscope camera, at the rate of nine exposures per second. During any period of 'fixation' there was a rapid change of position of the eye over a considerable

area about the point. The point to be fixated seldom if ever fell upon the exact *fovea centralis*. In moving from one point of fixation to the other, when both points were simple, the distances were not well taken at first and a corrective movement was required; such a movement was not required after the second or third excursion. When the point on the right was surrounded by lines, the fixation was changed in character, the estimation of the distance between the points very uncertain, the direction of the movements between the points disturbed. When a horizontal line cut by three perpendicular lines was fixated at the points of intersection the character of the fixation periods did not differ apparently from the fixation of a simple point, the distance from one intersection to another was correctly taken after two or three trials, and the eye followed the horizontal line very closely in making the movements. The two eyes do not move with perfect symmetry. During any period of fixation the small eye movements, which apparently are muscular tremors, may be in opposite directions, or the lines showing the paths of the movements may be at any angle. The lack of coordination of the movements of the two eyes is emphasized by one record which showed that the right eye had moved through an arc of about 10 degrees to the second fixation point, while the left eye was still at the first point.

The Fixation Pauses of the Eye in Reading: WALTER F. DEARBORN.

Photographs made with a modification of the Dodge photographic apparatus of the movement of the eye of different individuals and of the same individual in different readings of the same page show considerable variation in the number, duration, and relative position within the line of fixation pauses, and in the character of the connecting movements. The differences between children and adults were found to be in the general unsteadiness of fixation, and inaccuracy of movement of the former. In the speed of movement, and in the number of fixations they did not differ materially from adults. It appears probable from various irregularities and movements of the eyes even in the case of adults, that fixation is not always a matter of a distinct resting or pause even with several millimeters or letters of the line, but that in successive fixations of the same object any one of the several retinal points lying close to the fovea will satisfy equally well the requirements of what is objectively the same fixation, and that there are also movements of the eyes within these limits which do not denote changes in objective fixation. Secondly, there are more or less distinct pauses or breaks in the movement of the eye which are probably periods of significant stimulation; and, finally, a shifting of the position of the eye due to

various causes shows that our conception of what we mean in general by fixation will need to be modified.

Psychology of Esthetics: Experimental Prospecting in the Field of the Comic: LILLIAN J. MARTIN.

This investigation was undertaken for the purpose of becoming directly and personally acquainted with some of the problems involved in that which is termed 'the comic,' and to ascertain by actual trial the possibility of applying satisfactorily certain well known psychological methods to the solution of such problems. The experimental results show: 1, that the comic impression from a picture decreases in the same experiment from moment to moment and in successive experiments from day to day, and that the rapidity with which this occurs depends partly at least upon the complexity of the details; 2, interspersing new pictures between the old, forced or spontaneous laughter, drinking coffee, good physical condition and high spirits, a non-rigid holding of the body and a longer period between the exposures of a given set of pictures, help the comic effect; 3, that time differences may exist when two pictures are successively examined and compared, that is, differences growing out of the fact that one picture is seen before the other; also time influences, that is, differences arising from the unequal loss or gain of fun in the norm and the comparison at the same sitting and successive sittings; 4, that space differences which depend on whether a picture is at a reagent's right or left also exist when two pictures are compared; 5, that a sad or comic fore-picture affects the comic impression received from a given picture; 6, that the direction of the judgments of the degree of funniness and of the tendency to smile and laugh take a similar course; 7, that the presence of a smiling or doleful face in a picture increases its funniness; 8, that increasing the size of a picture and moving it help its funniness; 9, that the method of gradual variations is peculiarly adapted to investigating the particular degree of exaggeration which is most comic; 10, looking at comic and other pictures and listening to jokes increase both the rapidity of the breathing and of the pulse.

The Synthetic Factor in Tactual Space Perception: THOMAS H. HAINES.

An investigation in tactual localization by Weber's second method is reported. The observers were six with normal vision, and seven blind. The object of the experiments was to show the function of the visual image in tactual localization. This is shown by a comparison of average errors on 24 points on the volar surface of the forearm for the normals and for the blind, and for the normal

with natural attention, and the same with a special effort at visualization. It is assumed in common with a goodly number of psychologists that the visual factor will show itself in the better localization (smaller error) on the sides of the arm. This effect is manifest in only four of the six normal observers, and in some of these the excess error in the middle is so small as to be attributable to accidental causes. One of the blind observers gives the same result. The normal observers with special effort at visualization also reverse themselves, and give the smallest average error in the middle. The blind observers with the exception of the two, give the smallest error on the *radial* (far) side of the arm. The direction of error is predominantly peripheral and *radial* for the blind, while it varies greatly in the normal, and some of them show different tendencies on different parts of the arm. This coordination of least error on radial side and dominance of radial errors seems to indicate, in a preliminary way, the typical reaction of the blind where the visual image is surely excluded. This is probably due to the greater tactual functional significance of the radial side of the arm. Local signs and inner tactual sensations are thus better coordinated. The introduction of the visual image evens all parts up to this. But the importance of the visual image has been overestimated. It does not have the influence in better localization which has been attributed to it. Introspections of both the blind and seeing observers indicate that the inner tactual sensations of the touching and the touched member play a much more considerable part than has been attributed to them. But the question as to what that part is, an important question not only in tactual space perception but also in individual psychology, is not answered here. The function of this paper was rather to get the question definitely raised.

The Plot Interest: WILLARD C. GORE.

Recent discussions of philosophic method, particularly those involving the so-called pragmatic method, have incidentally brought to light wide differences in standpoint, so temperamental, so individual, as to arouse a psychological interest. Philosophy in the making is clearly psychical. It was not the object of this paper to discuss these individual differences in philosophy, but to raise the more general and preliminary problem as to what is the psychical character, the 'mental pattern' of the philosophic interest. For the purpose of raising and to some extent defining this problem the following hypothesis was stated: The type of interest known as philosophic assimilates to that fundamental and familiar type of interest known as plot interest. Philosophic interest and plot in-

terest are related as species and genus. Within the plot interest two types of interest are discriminated. (1) Interest in following, or rather inactively pursuing the course of the plot; interest in a conflict, in suspense, in whatever challenges speculation; in a word, the esthetic interest. (2) Interest in constructing, in weaving the plot; in working it out to a consistent whole; in a word, the artistic interest. These two types are normally alternating and correlative. The isolation of either gives rise respectively to estheticism and to formalism. The esthetic and artistic types of interest prefigure the two limits within which philosophic activity falls; namely, the speculative and the systematizing limits. The speculative, Platonizing interest in philosophy corresponds to the esthetic interest in plot. The systematizing, organizing Aristotelian interest in philosophy corresponds to the artist's interest in plot. The two interests in philosophy are normally correlative and alternating, within the experience of the individual. The isolation of either gives rise respectively to some form of Neo-Platonism or mysticism, on the one hand, and to some form of scholasticism on the other. The affinity of the philosophic interest for the plot interest rests upon the inherent nature of all thinking to be dramatic, in the sense of being the reflection, the rehearsal, of situations involving conflict and readjustment.

Recent Theories of Genius: I. WOODBRIDGE RILEY.

The literature of genius during the last two years presents two tendencies: Negative against the Lombrosian or pathological school: positive toward the explanation of genius as a superb synthesis of normal functioning. There is also a popular attempt to make genius a manifestation of the unconscious. The results of these investigations are apparently contradictory. (1) The pathological school (Lombroso, Nordau, Nisbet) makes genius a neurosis of an epileptoid nature, and like insanity a phase of a morbid susceptibility; its opponents say there is here no necessary lack of balance in the cerebro-spinal system (Stanley Hall, Moebius, Flechsig). (2) The physiological school conceives a genius as a higher faculty depending upon a given physical endowment (Allara, Reuda), others say there are certain mysteries of endowment not open to analysis (Jastrow, Nazzari). (3) The social school considers the great man the essence, the index, or the initiator of social progress (Seailles, Joly, Baldwin), against this some hold that the causes of production of great men lie in a sphere wholly inaccessible to the social philosopher (James, Spiller). (4) The subliminal school postulates an extra, subconscious personality with superior memory, imagination and inductive powers (Von Hartmann); on the contrary others

assert that such a consciousness is not an inner light, not a peculiar supernormal activity (Fullerton, Jastrow). But the subliminal considered as the minimal consciousness offers the best explanation of the apparent neuropathic or psychopathic characteristics of genius. Recent experiments in the discrimination of auditory and visual stimuli just above the threshold of consciousness might explain, for example, hyperesthesias of genius.

The Three Types of Religious Consciousness: F. C. DOAN.

Recent investigations of religious consciousness have exhibited two rather different methods of approach to the field at large. The most popular of these is of course the questionnaire method. There begins to recommend itself, however, another method of approach, namely, that which proposes to exhibit the motives underlying comparatively large religio-social groups. This method insists that the data supplied by the large sect, church, tribe, race and world movements are the really significant deposits of spiritual purpose. Both these methods are essentially pragmatic. Reality is held to be religiously significant only in those spots where it has been mellowed by the persistent rappings of spiritual impulses. On the basis of the second of these methods we may say there are three types of normal religious consciousness: the rational, the emotional, and the active or pragmatic. The first of these seeks to fill in the gaps of an otherwise self-contradictory reality with the solid masonry of an unyielding dialectic. The emotional or mystic temperament floats over these gaps by sheer force of good feeling. The pragmatic type avoids the gaps altogether and follows the well-beaten paths of its practical experience of the ultimate. It experiments with its gods. In some cases it retains an assortment of gods each a specialist in his proper field. Sometimes it adopts a surreptitiously deified man of the tribe; sometimes it accepts a becoming god whose affinity is moral rather than ontological. The history of religions is really a record of the almost uninterrupted triumph of the practical over the speculative and emotional in the religious consciousness of the race. Moreover, the religious culture of to-day is more intensely practical than ever before in the history of the race. The paper closed with (1) a classification of great religious movements according to these three types and (2) some suggestions as to the probable physiology of the types.

An Historic Note on Hypnotism: BROTHER CHRYSOSTOM.

A. So far as the present writer knows the word *hypnotic* occurs for the first time in English in a curious passage to be found in a book of the seventeenth century. It is entitled 'A Ternary of Paradoxes: The Magnetic Cure of Wounds; The Nativity of Tartar

in Wine; The Image of God in Man. Written originally by Joh. Bapt. Van Helmont, and Translated, Illustrated, and Ampliated by Walter Charleton, Doctor in Physick, and Physician to the late King. London. Printed by James Flesher for William Lee, dwelling in Fleetstreet, at the sign of the Turkshead, 1650.' This is the *second* impression. The passage in question occurs in ¶ 154 of the tract on the 'Magnetic Cure of Wounds' and reads: "To this series belongs the subductive virtues of Cathartic or Purgative, the somniferous faculty of *Hypnotick* or dormitive *medicaments*, etc." I have been unable to find a copy of the Latin original of Van Helmont, and, therefore, I do not know whether the term was coined by Dr. Charleton. B. In Harper's 'Metaphysics of the School,' Vol. III., Pt. I., pp. 350, 351, and footnote, occurs in interesting application of Baron von Reichenbach's theory of the *od* to the question of indistancy, with corollaries referring to the 'evil eye,' animal magnetism, hypnotism, etc. As a relaxation one may then take up Gautier's 'La Jettatura,' which is capitally written. C. The relation of Hypnotism to fundamental principles of philosophy and theology is probably best treated by the Dominican professor Coconnier in his thoughtful book, 'L'hypnotisme frano.'

REVIEWS AND ABSTRACTS OF LITERATURE

Balance: The Fundamental Verity. ORLANDO J. SMITH. Boston, Houghton, Mifflin and Company, 1904. Pp. 279.

The author has adopted the plan followed by Descartes in publishing his *Meditations* and, having sent advance copies of this work to various scholars, has incorporated their criticisms in his book, together with his own final rejoinder. The result is that the appendix, in which these criticisms are reproduced, although it contains twenty-eight separate recapitulations of the author's argument by as many reviewers, is nevertheless very interesting reading by reason of the variety of *Weltanschauungen* thus placed side by side, the contrasted habits of mind displayed by the critics, and the dialectic stimulus given to the reader.

In the original essay, which makes up about half of the book, the author seeks to establish the real harmony of science and religion by showing that they rest upon an identical law. Starting with the general aspects of nature, he reduces causation, gravitation, evolution, the indestructibility of matter, the persistence of force, the eternity of motion and the uniformity of nature to the one law: to every action there is an equal and opposite reaction. The highest generalization of science is, accordingly, 'that Balance rules the world.' Chemical activity, man's relation to nature, history, economics, ethics and logic are then briefly reviewed, and this same law is pointed out in each. Passing to religion,

the author finds its essence to consist in three beliefs: that the soul is accountable for its actions; that the soul survives the death of the body; and that there is a supreme power that rights things. These in turn can be reduced to the declaration 'that right rules the world.' But since this belief is included in the generalization already derived from science—that balance rules the world—religion, or at least natural religion, and science are seen to be in perfect harmony.

The three essential beliefs of religion are chosen upon the principle that the conception of religion must be made up of points in which believers agree; but, says the author, one 'philosophical creed maintains, perhaps unconsciously, at all events in logical effect, that wrong rules the world. This position, which is that of materialism, is due to the denial of the second fundamental belief, that the soul survives the death of the body. Hence the closing chapter of the first essay is devoted to maintaining the immortality of the soul. Aside, however, from the fact that without this belief the doctrine of balance itself could not be upheld, the argument is rested upon the theory that soul is a self-existing, uncreated and indestructible entity, for which the reader is referred to a previous volume entitled 'Eternalism.'

The criticism on the ground of a lack of logical precision in the use of conceptions, especially of the dominant conception 'Balance,' as well as the commendations for rhetorical skill, which different writers of the appendix express, is to the mind of the present reviewer pertinent. But the crucial point of the book is the conception of religion. The author apparently does not realize that religion is a function of human life, not a set of doctrines, no matter how simple and widespread. The essence of religion is worship, communion, obedience. Most assuredly do these functions involve the belief in certain objective realities of a transcendent order and in the possibility of certain normal relations to those realities. Assuredly, too, these beliefs may be made special objects of discussion. But such a discussion can not successfully separate itself from the functions of the soul in which those realities are experienced and in which the actuality of those possibilities is grasped. The harmony of science and religion must be shown by defining the relation between the religious and the scientific functions of the soul and not by inserting the artificial middle term of a 'natural' religion. One might as well try to show the mutual dependence of branches and roots and the consequent unity of air and earth by ignoring the living relation of the two in the tree's life and inserting props between the branches and the roots.

The emphasis upon a sense of accountability as essential to religious sentiment is a true insight, but this insight is blurred by identifying that sense with a recognition of the law of cause and effect. In the final paragraph of the appendix, too, the author is close to a principle that would bring out the functional harmony of science and religion, when he demands in religion a lofty courage and sublime faith as the condition of its life, and points out that similar qualities are the source of the fundamental affirmations of science; but the significance of this principle is

overlooked in the desire to bring all truth under the head of a single proposition, viz., 'that Balance rules the world.'

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Moderne Geschichtswissenschaft. Fünf Vorträge. KARL LAMPRECHT. Freiburg im Breisgau, H. Heyfelder, 1905. Pp. 130.

Of these five lectures the first was delivered at the St. Louis congress, the rest at Columbia University the fall of 1904. An English translation is to appear soon.

The first lecture declares that it is the emphasis on 'social psychology' that marks historical science to-day; and discusses, also, the relations of history to other sciences. The second outlines five great epochs of German history: Symbolism, Typism, Conventionalism, Individualism and Subjectivism. The third and fourth discuss the general character of periods of *transition* from one such epoch to another. The fifth asserts the necessity of referring national to universal history; and assigns art and the activity of the imagination generally as the most appropriate field of historical investigation.

The law that applies to all transition periods is the goal Professor Lamprecht here seeks. He only approximates it; but, in so doing, approaches, he says, a result that a psychologist could have foreseen. Indeed, it seems that when special characteristics are cleared away, the general law, this hardly won 'result,' would amount to little, if any, more than the statement that men in masses, as well as separately, attain new characteristics through receiving new incitations and becoming more susceptible thereto. Would not the historian feel quite justified in *assuming* the truth of this law, even at the beginning of his investigations? The author seems to regard the magnificent discovery of certain aspects of the unitary development of German life, which he has elsewhere so beautifully presented, as altogether subsidiary to the discovery therein of a law apparently as trite as this.

It is surprising to find in these lectures, which are largely methodological, no reference to that view of historical science as a science of individuals, which Professors Rickert and Bernheim, among many others, have so clearly established; especially when we recall that 'social psychology,' Professor Lamprecht's special field, implies a recognition of that individuality in societies as a whole for which those logicians have contended. He speaks of the soul, the 'psyche' of the nation continually; he describes the nation as an organism; and in his large work these terms are justified, in large measure, by the concrete individuality of these things as there described. But here the author retains these terms without that justification. The 'psyche' here is nothing but certain elementary characteristics supposed to pertain to the majority of the nation at a given time. Hence the laws governing this 'soul' of the nation very naturally conform to those of the psychology of individuals. They are those laws; and the term 'social' psychology here refers to the social aspect of individual minds, not to the 'psyche' of the nation.

Wherever Professor Lamprecht verges on a logical or an ontological question a deep-seated confusion seems to come to light, and to mar the usual charm and force of his sentences. In his war against the 'great-man' theory of history, *e. g.* (p. 118), he maintains that the genius is not *qualitatively* distinct from other men; this is his fundamental argument. Yet he proceeds beautifully to describe the qualitative distinctions of two types of genius, and their effects. Again, the dominating force in the soul of a nation, we are told, is an illusion; it does not exist (p. 95). Yet throughout these lectures this dominating force, this 'Dominante,' is treated as a definite thing that explains events. Such occupation of two opposed positions is frequent.

These lectures are exceedingly attractive and make one long to learn more of the author's 'Deutsche Geschichte,' the volumes of which are slowly appearing. But I can not think they are a safe guide in, or even a suggestive contribution to, the discussion of the many logical problems presented by the modern science of history.

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Scepticism. A. K. ROGERS. *The Philosophical Review*, November, 1904. Pp. 627-641.

Does scepticism by appeal to the fact of error—the fact that the best-grounded beliefs may eventually turn out false—make a final and satisfactory philosophy impossible?

The fact of doubt presupposes the validity of thought, *i. e.*, there are valid grounds for the doubt. A completely consistent scepticism is therefore impossible if thinking is to continue. Scepticism 'is a personal confession that in the face of a certain problem or group of problems, I feel myself baffled and ready to quit.' Another man may feel the opposite about the same problems. Huxley was a sceptic in philosophy and religion (things of secondary interest to him), but not in science, which was his chosen field of work. Since all beliefs are liable to be changed and outgrown, scepticism doubts the validity of any belief and asks for the criterion of a valid belief, and if any one is better than any other.

Now, 'logical certainty belongs only to the abstract statement of the conditions of belief and not to any single concrete belief about the actual nature of things.' Beliefs, as to both their content and their logical consistency, go back finally to one's personal assurance and satisfaction. We believe things because our practical nature demands it; and logical consistency is only a peculiar intellectual satisfaction which has final force to the one believing. Yet mere *personal* assurance is no valid ground of belief. Back of this there must be the logically consistent view of all the data concerned. This intellectually honest and self-consistent view based upon all the known facts constitutes the valid ground of belief. Such a belief is true.

Further experience may reveal new data which will necessitate a change in the belief. This new belief will be true with reference to all

the facts both old and new; but the truth of the old belief is not destroyed, but taken up into the new.

"If an opinion seems consistent to any man, it is actually consistent on the basis merely of the data which enter consciously into the forming of that opinion; and it justly claims the universality of any judgment. Any man whatsoever, seeing no more and no different facts, would arrive at the same conclusion. Moreover, so far as it goes, the basis on which the judgment is formed represents reality. Nothing whatever that is ever taken for a fact is wholly unreal. The interpretation may be wrong. But some modicum of reality does underlie it, which a complete knowledge would have to take into account. Every conviction of truth, then, rests upon reality, and would be justified were there no other facts which it leaves out of account."

While scepticism as a final attitude in philosophy is impossible, yet each generation, and in a sense each individual, must work out for itself the solution of the philosophical problem.

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Ethical Subjectivism. T. DE LAGUNA. *Philosophical Review*, November, 1904, pp. 642-659.

The doctrine that conduct which the individual believes to be right is right has generally been objected to on three accounts: because it fails to satisfy the intellectual need of a standard for moral values, because it fails to satisfy the practical need of social conservatism, and because it seems to exclude knowledge or wisdom from the moral ideal. In respect to the last objection, however, it seems that as a matter of fact we do not hold the moral agent responsible for the unexpected consequences of his acts, unless the limitations of his knowledge can be traced to an unwillingness to acquire knowledge and use it, and we have gradually purged the moral ideal of all that is external to the volitional disposition of the agent, as, for instance, of strength, beauty, and *in casu*, knowledge.

The subjectivist view is sometimes misunderstood. It does not mean that subsequent enlightenment may not determine the individual to act differently under similar circumstances, though the former act be recognized as eternally right; it does not mean that the good man is not in duty bound to seek increase of knowledge; and it does not mean that the good-will is simply the will to be good, without having any particular object characteristic of it.

Ethical subjectivism emphasizes the prospective judgment, it makes the judgment upon the contemplated act the archetype of all moral judgment. Without self-judgment there can have been no true morality, for the judgment upon another that does not apply (hypothetically) to the self, is a mere expression of gratification or anger. Moral worth is measured by the satisfaction of a self-conscious person as a harmonious totality. And, although in general moral conduct is accompanied by a consciousness of its moral value, even impulsive acts may be an indirect index of a good or bad will, and hence receive moral censure or blame. In fact,

conduct which is accompanied by the belief in its rectitude may, nevertheless, be misdirected by some previous fault, and may, therefore, quite in the spirit of ethical subjectivism, be censured. But, since human life must be lived forward, this good is nevertheless the highest ideal toward which a man can strive.

If it is objected that ethical subjectivism leads to a chaos of individual caprices it may be urged that moral values, like other values, tend within each social group to uniformity, that his social relations force upon the individual a criticism of his conduct from other view-points than his own, and, finally, that moral ideals are a social inheritance, imitatively accepted by the individual, in acting upon which their immaturities tend to be corrected by experienced failures of adjustment. The willingness to be good is not divorced from practical wisdom, but is the condition for its acquirement, in that action upon moral ideals already possessed is the way to a deeper appreciation of the moral requirements of the social situation.

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NOTES AND NEWS

PRESIDENT ELIOT, of Harvard University, has been elected a corresponding member of the Academy of Moral and Political Sciences of the Institute of France.

It is said that Harvard University and the University of Berlin have practically arranged a method by which a temporary exchange of professors will occur.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

A PHILOSOPHICAL CONFESSION

IN the program of the philosophical department of Harvard University, 1904-1905, it is announced that one of the philosophical professors will develop a theory of pluralism on the basis of experience, and that in the next term his colleague will develop a speculative theory of the absolute; and it is remarked that 'the student will have the opportunity of comparing two different views regarding fundamental problems: radical empiricism and absolutism.'

It is not very often that philosophical differences are announced so openly and in so true a spirit of free discussion. As I had myself discussed the fundamental problems in a little book, 'Philosophical Problems' (Danish edition, 1902; German edition, 1903), and as I, during my visit to Harvard in October, 1904, was very much interested in the discussion which was about to take place in American philosophy, Professor William James proposed that I should give a lecture for his students, in which I should describe my position on this question. The present paper gives the essential content of my lecture, but I have also found a place here for some parts of a paper which I read for the Philosophical Club at Wellesley College.

I

The importance of pluralism, *i. e.*, of the tendency to accentuate the multiplicity and the difference of phenomena, depends on its power to raise problems. Both thought and sensations suppose difference, contrast, variation. Already Thomas Hobbes saw that, when he said that to have always one single sensation would be the same as to have no sensation at all. The psychology of our time has, generally speaking, confirmed this view. Fechner's law on the relation between physical impression and psychical sensation points in this direction. And our thought starts with greatest energy when two judgments contradict one another, *i. e.*, when a problem arises.

I believe there is special reason for accentuating this point in the actual state of philosophy. There seems to be too much metaphysics

in the air, and it is important not to forget what we have learnt from positivism and criticism. The old English school had the mission to keep the attention of philosophers on experience, and it started the great movement against dogmatism in the last three centuries. It is no accident that the greatest setter of problems, David Hume, belonged to this school. In evolutionism this school has said its last word—the widening of the concept of experience to connote not only the experience of the single individual, but the organized experience of the whole species. We may hope that a new, refreshing start will be made.

Pluralism makes the world new for us and necessitates a revision of our categories, our principles and our methods. A dogmatic sleep is too tempting for the human mind. We are inclined to suppose that we can develop—or perhaps already have developed—thoughts in which all existence can be expressed. But, as a Danish thinker, Sören Kierkegaard, has said, we live forward, but we understand backward. Understanding comes after experience. Only when life is closed can it be thoroughly understood. This is our tragico-comical situation. Even a divine thinker could only understand the world when the life of the world was finished.

II

But pluralism as such brings no understanding, no intelligence. To understand is to connect one fact with other facts, to find a uniting principle. Multiplicity as such would only make description and classification possible, and even this only under the condition that the manifold phenomena were not only different, but also similar. The only meaning of 'understanding' which a consistent pluralism can acknowledge is understanding as mere recognition, not as explanation.

Very often we must for a long time be contented with stating a single, isolated fact. But then this fact raises a problem—even by its isolation. We have an interesting example in the botany of our time. The Dutch botanist, Hugo de Vries, maintains that new types can arise suddenly. Great variations—not small, as Darwin thought—are, according to de Vries, the condition of evolution through the struggle for life. But, if this is so, it ought to be the task of natural science to explain how this arising of a new type was possible, to find the hidden conditions for that which was for our observation a sudden appearance, to discover a continuity between it and other appearances.

Now, it is a fact that we in many cases have found such connection or continuity in nature. It is the ideal of knowledge to find it in all domains of observation. Our mind can only understand

by synthesis, and the principle of continuity is therefore the pre-supposition, the working hypothesis, of all science. But we must also acknowledge continuity as a characteristic of reality. We have no right to suppose that the fact that we can not understand phenomena, if we can find no connection or continuity, should be without ground in reality itself. If we will build our philosophy on experience, we ought to give full importance to connection, unity and continuity, as well as to difference and multiplicity. Experience shows us both, and pluralism can, therefore, not be the sole or the last word of the philosopher. And there is an inner connection between continuity and multiplicity. All qualities, powers and characters which we ascribe to the single elements or beings which pluralism acknowledges are only known through the connection of these elements or beings with a whole order of things. We can, for example, only ascribe energy to a being because we experience that it actually does a certain work, that alterations in it or out of it have their cause in it. If it were absolutely isolated, we could not ascribe any predicate to it, we could not know it at all.

Perhaps it is impossible to develop a metaphysical theory which shall give both facts their full right. But this ought not to lead us to forget the urgency of the problem.

III

I, for my part, call myself a monist, because connection and continuity seem to me to be more important facts than multiplicity; it is, as I have shown, only through their connection one with another and with us, that things can be understood. Every difference and multiplicity supposes a deeper continuity, which it is our task to discover. But I see the great hindrances for an absolute monism, and I therefore call myself a critical monist, the word 'critical' being taken in the same significance as when Kant called his philosophy critical philosophy. A perfect and universal synthesis is for us always an ideal which has to struggle for existence. Every totality we find in nature has always a history; it has developed through interaction of elements and supposes differences in the nature and the tendencies of the different elements. As a critical monist I say: If we can not carry out our monistic ideal, the reason could be that reality (world, existence) is not completed, is not finished, is yet in full development. Only if we could think this development completed in any time, would the world be quite intelligible. It is the reality of time which makes the world irrational for us. There is at least one thing which is not completed: our thinking, our knowledge; and this is also an element in reality! It is the wonderful contradiction of the great rationalistic systems—

Plato's, Spinoza's and Hegel's—that they can not explain the striving and struggling thought whose work these systems themselves are.

The incompleteness of thought, the necessity of always renewed striving after truth, has, perhaps, its cause in this, that new elements may arise in the world. It would, then, not only be we who discover something new, but it would be the world itself, which was new and had to bring its new element into harmony with the older. And there would then be an inner connection between our struggling thought and the essence of reality. This is my metaphysics, if I have one.

The problem also of mind and matter is perhaps conditioned by the incompleteness of our knowledge. There is no necessity for a choice between spiritualism and materialism, if mind and matter are not contradictorily opposed one to the other. This contradictory opposition is often quite dogmatically assumed. Existence may, as Spinoza taught, have more forms, qualities or attributes than our experience can show us. Critical monism, which maintains a uniting principle without dogmatizing, points to the possibility that we have not all conditions given for solving the problem.

IV

That an absolute systematization of our knowledge is not possible is no evil. The history of philosophy shows us, according to that treatment of this science which of late years is more and more general, that systems have more energy, depth and freedom in their first stage, in *statu nascenti*. The history of philosophy is more and more the history of the starting, of the impulses of thought and of the leading experiences of great thinkers, not only the description of the completed systems. And even in its completed form a system is only a means to understand ourselves and the world. It is an essay which will try the strength and importance of certain ideas or certain experiences. The great systems are projections, electric search-lights, with whose help we try to explore the dark.

But the thought with whose help we find our way through the world is itself only a part of the world, and we do not know how important a part of the world it is. Can the whole content of the world be translated into thought? Can we, as speculative and metaphysical idealism would do, conceive the world in its innermost ground as an expression of thought? To me it is evident that all such idealism is founded on an analogy which can not be verified. The thinking, psychical being, which we only know in our own personal experience and as a part of the world, is, in speculative and metaphysical idealism, conceived as an expression of the essence of the world considered as a whole. The analogy which is here ap-

plied is different from the analogies which we make use of in scientific experience. We use analogy scientifically when we apply it to throw light on one domain of experience with the help of another domain of experience. Here a verification is possible through the consequences to which the analogy leads us; we can see if these consequences agree with our progressing experience. But when we maintain an analogy between a part of existence and existence considered as a whole, no verification is possible. Analogy transcends here very soon the limits of science, and has only poetical value, if it has any value at all. It may be sublime poetry, if the metaphysician is a man of genius—poetry of a more intellectual, though less emotional character than the poetry of the great religions, which also are founded on analogy.

I correct myself: we ought not to say ‘only poetry.’ Our deepest life-experiences can only be expressed in poetical form. There is a life-poetry which is a very serious thing, the most concentrated expression of the experiences which can be made of the value of life and of life’s endeavors.

V

Our thought is both larger and smaller than reality. It contains forms and possibilities which never are fully realized. It develops hypotheses between which we have to choose, as only one of them can be true. This is necessary. In order to reach the aim of knowledge we must try several means, survey the possible ways. The progress of knowledge consists, from this point of view, in the reduction of these possibilities, perhaps in the exclusion of all except one. Existence or reality is in every single case one single definite thing, is one in opposition to our many possibilities. As Schiller says, *Eng ist die Welt, und das Gehirn ist weit*.

But from another point of view the world is richer than our thought. It contains the possibility of experiences which have not yet been made. New discoveries and experiences lead again and again the thought on new ways. Thought is, as already said, only a part of the world, and there are always more things in heaven and earth than are dreamt of in our philosophy. Here, then, we must say the reverse of Schiller, *Weit ist die Welt, und das Gehirn ist eng*.

This incommensurability, or this (in a mathematical sense) irrational relation, between thought and reality will always be experienced anew. Our intellectual labor will always have to progress on the one side in simplicity and concentration, and on the other side in complexity and extension.

VI

My sympathy is more on the side of positivism and empiricism than on the side of speculation; and in methodological—in a certain degree also in metaphysical—respects I have a sympathy with pluralism.

I will now say a few words on the way in which my thoughts have developed in this direction.

In my youth the influence of the Danish philosopher and religious thinker, Søren Kierkegaard, was decisive for me. He waged a passionate war against speculation, with strong accentuation of the conditions of thought and of the value of the single, real, personal life. Later on the study of Comte and of the old English school gave me a new start in the direction of a philosophy of experience. And my own more independent studies have maintained me on this way. In this last respect three points have been of special importance for me.

My psychological studies led me to accentuate the differences between individuals in respect of the relations between psychical elements. Even if these elements could be said to be 'the same' in all individuals (which only to a certain degree is true), the manner in which they are combined, the 'timbre,' will be different. The general psychological laws manifest themselves in many different forms in the individual cases. There is here a multiplicity which no analysis can exhaust. In my 'Philosophy of Religion' I have more specially pointed out the great importance of individual and historical differences, and I have described the most important types of religious life. We still miss a comparative human psychology. The study of individual differences is only in its beginning. In America good work has been done in the domain of the psychology of religion by Starbuck, Coe, Leuba and, most of all, by William James.

Also my ethical studies have led me in this direction. The problems of scientific ethics are of two sorts. The first task is to find and establish the ethical principles, the standard we are to use in valuing human actions and institutions. Already, here in the starting-point, in the fundamental point of view, great personal and historical differences make a scientific foundation of ethics appear as a great problem. And even if this first difficulty is conquered, a second problem arises: how are the principles to be applied in the special cases? Human individuals have different powers and dispositions and start under very different social and historical conditions. They can, therefore, neither qualitatively nor quantitatively have the same tasks and the same duties. How can we be sure that the right sort of work is chosen? And how can we be sure that

sufficient work is done, that the *quantum satis* of human will (to use the words of Henrik Ibsen's 'Brand') has been applied? Also here new experiences are still possible. The new experiences raise new problems, and also our old problems can only be solved through always progressing experience.

The third point belongs to the theory of knowledge. I saw—what others had seen before me—that Kant has not solved Hume's problem, and that this problem is still standing. It is a necessity for our thought to apply the law of causality; but this does not justify the assertion that this law is universal and metaphysically necessary. We may construct the concept of an ideal, complete and perfect experience, and for this experience the law of causality would have universal validity. But the experience which we really have is limited and imperfect. New elements and events are still experienced, and the great question is, if they can be connected with our other experience in a rational way. This contrast between ideal and real experience—and consequently the importance of Hume's problem—was undervalued by Kant's speculative followers. At the end of the nineteenth century the problem was taken up, not only by philosophers, but also by men of science. It is now more and more admitted that the importance of scientific and philosophical principles consists in this, that they lead us in our striving after understanding. Their truth is their validity, and their validity is experienced in their power of leading us in our intellectual work. A principle is true if it can be applied, if we can work with it, *i. e.*, gain understanding with the help of it. Truth is a dynamic concept; it manifests itself in the working of our thought. And it is a symbolic concept, because it only presupposes an analogy, not an identity between thoughts and events. This holds of the truth of our sense-qualities; they have objective value as symbols, but can not be proved to be images of things. It holds, too, of the truth of our formal-logical principles, of the principle of causality, etc. We can not compare our sensations and our principles with an absolute order of things. Surely we have no right to regard it as a pure accident that just these special sensations and thoughts make it possible to gain a progressing knowledge of the events in the world; but neither have we the right to regard them as direct revelations.

VII

Where we can not apply the principles of our thought we end with a problem. And, so far as pluralism can and must be maintained, so far as the events and elements remain isolated and unconnected, so far we have unsolved problems before us. But pluralism would lead us to false supposition if its meaning were that the value

of a phenomenon is diminished when it can be understood, *i. e.*, brought in rational connection with other phenomena. Isolation may be a cause of evil as well as of good. If we specially consider personal beings we must admit that every personality is a little world with its inner order, its law of development and of interaction of psychical elements. No character without an inner continuity! And this little world can not maintain its value without standing in interactions with other personal beings as elements in a social totality. Our ethical endeavor is to produce greater continuity in the inner world of personality and in the greater world of society, as our intellectual endeavor is to find a still greater continuity in the world at large.

And here lies for me the greatest importance of irrationalism or pluralism, so far as we must acknowledge it. The world is not complete, not harmonious, not rational; therefore there is a work to be done. A little American girl who had been told that God created the world once for all, asked her mother: 'But in what business is he then now?' This was a quite philosophical question. There is perhaps a great work going on in the world at large, through which it is developed to greater rationality and harmony. But for us it is of the greatest importance, that there is a work to be done by us, that our own work in thought and will is a reality, a real factor in a great process of evolution. Both the problem of knowledge and the ethical problem have then a natural and important place in philosophy.

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A SYNTACTICIAN AMONG THE PSYCHOLOGISTS

SYNTAX has passed, they tell us on every hand, out of the logical into the psychological stage. Why not psychical stage? The logical sting is in the tail of the word. Ratiocination returns to plague us after all. And what is the whole movement, psychical or psychological, but a reversion to Apollonios Dyskolos with his definition of the moods as *ψυχικαὶ διαθέσεις*? If the moods are *ψυχικαὶ διαθέσεις*, why is not every utterance modal? Why does not every utterance denote a state of the soul? A universal psychology would be a universal syntax. But language is largely used in determining psychological processes and there is ever before the student the danger of the dreaded circle. The circle is explicable, but inevitable for all that. Small comfort to him who perishes in the snow of metaphysics. Apollonios Dyskolos, I repeat, the most considerable

of Greek syntacticians, was a psychologist, and your mere grammarian is apt to consider him supersubtle. Take his theory of the senses. According to him, the sense of sight is the king sense. The verbs of sight are active and so take the accusative. Sight is under the control of the will. You can shut your eyes. You can not so effectually stop your ears. The other senses are passive and so take the genitive. And yet they are not purely passive. Greek has another construction for the purely passive, and we must recognize a certain going forth of these senses towards the object, a certain reciprocity, as we might say. Clearly so in the three lower senses; touch, taste and smell are reciprocal. We have then two classes sharply distinguished: sight, on the one hand; touch, taste and smell, on the other. Between the two lies hearing with its active and its passive constructions—accusative and genitive. The same principle has a wider application, thinks Apollonios: ἐρᾶν, passionate love, takes the passive construction, like touch, taste, smell; φιλεῖν, appropriating love, selective love, takes the active construction. In Latin, *amare* and *diligere* may be psychologically distinct, but they are not syntactically distinct. And somehow "Ἐρως ἀνίστατε μάχην seems to be specifically Greek; whereas *mille modis*, *Amor*, *ignorandu's*, *procul abhibendu's* *atque abstandu's*, even if translated from the Greek, is Roman to the core. We are not so badly off in English. 'To love' is φιλεῖν; 'to be in love with,' 'to be enamored of' is ἐρᾶν.

I have often wished that some modern psychologist would study Apollonios and not leave him wholly to the mercy of grammarians—as crabbed as he and not so penetrating. Meanwhile, such interpretations of syntactical phenomena as those just cited, have a special interest for those whose great desire is to understand the Greek mind, to take the Greek point of view. I, for one, am less concerned about the scientific resolution of a mixed case into its elements than about the composite photograph that the mixed case made on the Greek sensorium; and though Greek syntax fell early into the hands of the philosophical schools, notably the Stoic school, and was put under the harrows of system-mongers, still much of what we call philosophy consists in getting out of language what was originally put into it, and when we examine grammatical nomenclature we find reflexes of national conception. But genitive and dative as mixed cases and very difficult problems I pass over. There is, however, a case, or case function, if you choose, common to human speech, that holds in itself the Greek theory of the universe; and that is the accusative. The Greek grammarian calls the fourth case ἡ αἰτιατικὴ πᾶσις. αἰτία came to mean cause, whatever cause means. The word has a bad connotation. Language is pessimistic. We can not help that. The most common Greek demonstrative has a tone of

reproach. There are more bad smells than good in the world. Object and object are one. So *αἰτία* means in the first line 'blame.' *αἰτία ἐλομένου*, says Plato. *αἰτιάσθαι* is 'to blame,' 'to accuse.' This *αἰτία* is the word from which Greek grammarians got the name *αἰτιατική*. The Romans took the bad end of *αἰτία*, and translated *αἰτιατική*, *accusativus*—hopeless stupidity, from which grammar did not emerge until 1836, when Trendelenburg showed that *αἰτιατική* *πῶσις* means *casus effectivus*, or *causativus*. This gives us the Greek conception of the case, or at all events one Greek conception, and that is something. Linguistically, we may refuse to give the accusative this metaphysical definition, as the case of the object effected. The accusative is merely one pole, the other being the nominative, what we call the verb being the current between the two. But if we are to have a definition, we must admit that the characteristic construction of the case is that of the object effected. The object affected appears in Greek now as an accusative, now as a dative, now as a genitive. The object effected refuses to give its glory to another and the object affected can be subsumed under the object effected. To slay a man is to bring about manslaughter. Linguistically, it is a mere matter of apposition or attribution whether you call the accusative an inner or an outer object.¹ Psychologically it is the object effected that dominates. And that is a matter of significance for the Greek conception of the world without. The consciousness of the not-me comes from the forthputting of energy, from the object created. The world is first *Wille* and then *Vorstellung*. The nominative is, as has just been said, one pole, the accusative the other. Only the personal has the nominative, only the personal has will. Neuters (non-personals) have no nominative, except by courtesy. *πατήρ* and *μήτηρ* are nominatives.

¹ The term *inner object* has been used for many years by the makers of Latin and Greek grammars, but as it may not fit into the nomenclature of modern psychology, I subjoin a note from my Latin grammar (3d edition, § 329): "The Accusative is the object reached by the verb. This object is either in apposition to the result of the action of the verb, and then it is called the inner object, or object effected (*e. g.*, strike a blow, strike a coin); or it is in attribution to the result of the action, and then it is said to be the outer object, or object affected (*e. g.*, strike a man)." Compare also *Amer. Jour. of Philology*, II., 89: "When Byron says, 'I want a hero,' 'hero' would be called in grammatical parlance an outer object; but he says in the next breath, 'an uncommon want,' which is an inner object. There is no grammatical difference between the two expressions. The 'uncommon want' is a 'hero-want' so to speak." "It seems better < therefore > to take the inner object as the fundamental meaning because this is the universal complement, which can not be said of the outer object." The Accusative was recognized as the case of *die reine Wirkung* as long ago as 1829 by Bernhardt, in his 'Griechische Syntax.' It was really a rediscovery.

τέκνον, 'the thing begotten,' is the result of the action of πατήρ and μήτηρ (the τοκεῖς), and τέκνον is an accusative, to begin with. *ὅ, ἡ παῖς*—there you have personality.

The preference thus given to creative energy, to will, is shown very distinctly in another syntactical phenomenon. The infinitive originally, as it seems, a dative, a *for-which* case, a case of sympathy, fell into the Malebolge of the deorganized. It became practically a neuter, an accusative neuter. As such it became the object—I hate the word—it became the resultant of verbs of creation, verbs of will and endeavor. As such, it had its three tenses, present, aorist, perfect; or, as I should prefer to call them in order to avoid confusion with the indicative tenses, paratatic (durative), apobatic, syntelic (*Amer. Jour. of Philology*, XXIII., 106). The result is necessarily subsequent. There is no need of a future. And the negative is the negative of the will, *μή*. Then came *Vorstellung*, then came verbs of saying and thinking, then came an alien negative, a negative that does not belong to the infinitive originally, the negative *οὐ*; then came the future infinitive, never necessary when there was a shadow of will, when there was a hope, a promise. But there is a set of verbs that will not desert the old plane of will, the verbs of Belief, the verbs of Asseveration; and so through all the ages Belief has the negative appropriate to will. The Oath that compels Belief has the negative appropriate to will. They allow the future infinitive, but they still have *μή*. The Grecian is shocked when Theokritos, Herondas, Babrius, treat an oath as if it were simple 'say so.' The Greeks say as plainly as they can say, 'You are responsible for your belief as you are bound by your oath.'

If it were not for the Greek negative the consciousness of this will basis might have been lost. We owe much to the *Geist der stets verneint*. And so the intrusion of one negative into the sphere of the other is an illuminating process. For *οὐ*, the proclitic negative—one can not deny the proclitic movement, however modern the nomenclature—*οὐ*, which I am fain to call the *masculine* negative, invaded the sphere of *μή*, invaded the realm of will. We find in the early language *οὐ* with the subjunctive, a mood of will, *οὐ* with the optative, a mood of wish. But these were mere raids, they were not conquests. But the *Vorstellung* did win at one point, established itself on one Gibraltar, but not alone. The particle *ἄν* introduced the notion of limitation. Pure will is free. Pure wish is free. The shadow of chance crossed will and wish. Will was sicklied o'er by thought, by calculation, but it never lost its negative of will by taking *ἄν*. But wish did. We have *οὐκ ἄν* with the optative. This troubled wish becomes what the grammarians call potential. We are in the realm of *Vorstellung*, with its negative *οὐ*. In late Greek

μη began to oust οὐ in turn. 'Les races se féminisent,' says Comte.

Reverting to the infinitive, especially worthy of note is the behavior of what we call consecutive sentences. In our earlier record there is no mere consecutive relation in Greek, nothing but finality (*Amer. Jour of Philology*, VII., 164). Language is teleological. The infinitive denotes purpose. There is no sequence but a designed sequence. A consequence involves a purpose somewhere, a will somewhere. If not a purpose, it is a quasi-purpose. The quasi-purpose is introduced by a comparative particle (ὥστε). We call such a sentence a consecutive sentence and distinguish between tendency and result, tendency with the infinitive, result with the finite verb. We distinguish between the animus of the lawgiver and the tendency of the law. But the tendency is a will all the same. The constitution of things, we say; God's will, the supreme maker's will, said the old thinkers whose thought is crystallized in language. Tendency takes the negative of will, μη; what I have called the *feminine* negative. 'The lady doth protest too much, methinks.' Result takes the objective negative, the masculine negative, man resting satisfied with the *fait accompli*. Practically indistinguishable, some grammarians have said; fundamentally distinguishable as *Wille* and *Vorstellung*.

One jotting more. Years and years ago I noticed for myself what was not then, even if it be now, a commonplace of Greek syntax, that the Greek from the earliest record known to us makes a sharp syntactical difference between actual perception and intellectual perception; what the German grammarians call *sinnliche und geistige Wahrnehmung*. Actual perception (sensation) takes the participle; intellectual perception proper, ideation, takes the finite construction ἔτι, and that is its favorite construction. True, intellectual perception may take the participle, but only in a figure. The future participle has to do with intellectual perception, naturally. The aorist participle is seldom used with verbs of actual perception, naturally. We see things in process (present participle), in a completed state (perfect participle), seldom flashing into existence, seldom at the moment of culmination (aorist participle)—the poet's eye oftener than the plain man's. Hearing, actual hearing, must have the present. The roll of thunder is not as the flash of lightning. The distinction is sharp. It is easily perceived. The schoolboy must learn it. But how did the language, how did those who used the language come to make it? Ask yourself the difference between 'I heard her sing' and 'I heard her singing.' Formulate the difference. It is much more subtle. The Germans can make nothing of it. Those who use the language for the most part do not try. In the Greek the

problem is easier. The participle as an adjective adheres to the noun, not so closely as the adjective, but still adheres. It is the surface that you perceive. Intellectual perception detaches the skin, as I have called it, and makes it something apart, and the $\sigma\tau\epsilon\iota$ that does this is not the outer object, as might seem at first. It is the inner object (*American Journal of Philology*, XIV., '374). Inner object again, result of action, result of will. Greek syntax is all in favor of will as the *prius*. *Wille* is first, then *Vorstellung*.

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DISCUSSION

IMAGE OR SENSATION

PROFESSOR MEAD'S discussion of Image or Sensation¹ contains so much with which I am in cordial agreement that it may seem idle or captious to raise a point of difference. But Professor Mead seems to have taken as functional a definition of the image which on the face of it I had supposed to be plainly structural. This leads Mr. Mead to ascribe to me the assumption that 'the image is to be found on the response side of the coordination,' whereas I am unable to see that the image as structurally defined (or functionally either, for that matter), is any more on the side of response than on the side of stimulus.

The definition reads, "The image is the content abstracted from past experiences in the form in which these are usually brought to consciousness to serve as means of dealing with problematic features located by sensations."²

Mr. Mead referring to this definition and commenting says: "The image, functionally defined, is then a content which in terms of past experience has served as a solution of the problem set in the form of the sensation. Except that this statement implies that the image is but one of the solutions involved in past experience in the presence of such problems as those implied in the sensations, it would correspond to the functional definition which Professor Dewey gives for the 'response.'"³

Now the point of the definition, as I had supposed, was precisely that the image is not an application of past experience as a solution

¹THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. 1, No. 22, p. 604.

²*Ibid.*, Vol. 1, No. 16, p. 434. Quoted by Prof. Mead, *l. c.*, p. 605.

³*l. c.*, p. 605.

of a problem; is not a solution at all; nor a 'response'; if anything, the inhibition of a 'response'; but that the image is an *abstraction* of the sense content of an application, solution or 'response.' In other words, it would border on the psychologist's fallacy to assume that past experiences which arise in the presence of problematic occasions and which are instrumental in reaching a solution are images. They are rather, I should say, what we call them,—ideas, plans, standards, ideals, methods, considerations, memories, dramatic situations, etc., as the case may be.

The image is the arrest of the usual flow of the consciousness of such mental processes as these for the sake of giving attention to the content, to the sensuous, qualitative aspect, apart from the reference, the meaning, or the affective value of the process. The image is essentially a structural category. Yet, as I endeavored to point out in the previous discussion, it is under most conditions impossible to abstract completely the sense content of ideational processes from reference, from 'response.' The very act itself of making the abstraction is an ideational act. The persistence of the reference, the meaning, provides a setting for the content abstracted, keeps it from becoming sensational, so that the image, or image-timbre, may be viewed as the joint product of the act of abstracting the content and the ideational setting which persists.

It is possible that Mr. Mead was misled by my definition of sensation which, as he pointed out, 'also suggests its functional value.' I am glad, in this connection, to express my very great indebtedness, indirect and intangible, as well as direct, to Professor Dewey's fundamental contribution to functional psychology, the article on the 'Reflex Arc Concept in Psychology.'⁴ The point I was interested in calling to attention was the overlapping, if not complete coincidence, of both the structural and functional definitions of sensation, using the word definition in a somewhat broad sense. It seemed to be a matter of interest, that an analytic psychologist, bent on tracking the processes of consciousness to their ultimate elements, should succeed in producing by the abstracting methods of his analysis, especially when extended into laboratory procedure, so large a crop of the same sort of mental realities as the vicissitudes of life bring to consciousness as problematic elements in experience. But, you say, there is a difference between producing a sensation in the culture media of a laboratory and giving the same a functional interpretation—the difference between a *terminus ad quem* and a *terminus a quo*. Granted, but the functional interpretation, if I understood its aim aright, is a statement in terms of both antecedents and con-

⁴ *Psychological Review*, Vol. III.

sequents. In the case of sensation the structural analysis is a distinct ally of the functional interpretation.

Is this true of the image? Is the structural definition also a functional one?

The image, however, structurally conceived is not a picture of still life. Movement, change, are its familiar characteristics. This is another way of saying that it is always a stimulus to further activity and experience. Thus an image which at the start was plainly a structural affair, born of the interest in setting apart the content of some ideational process, may end in calling into play a memory or a response which is relevant to the needs of present or future action; or, again, it may not, so far as we can discover.

For example, I may set out with an attempt to investigate what sort of imagery I use in my idea of a triangle, noting whether it be verbal or visual, etc.; presently the visual image of the musical instrument known as a triangle drifts into consciousness; then images of other instruments; finally it occurs to me that I must purchase this afternoon a ticket to the next concert or it will be too late. 'If it hadn't been for Berkeley,' I may remark, 'I should never have thought of it.' Query: Was not the imagery in this case functional only in an accidental and non-psychological sense?

Or, again, a problematic situation may arise which does not yield to the usual modes of response. For example, on arriving at the box-office I learn that only undesirable seats are to be had—not a very serious matter under most circumstances; but circumstances can be imagined under which it would be a very serious and puzzling matter. In such a case, fixing upon the structural aspect of past experiences that come surging up in anticipation of future action serves to inhibit otherwise disastrous responses, and at the same time intensifies the stimulus to further revelations of the conditions of action and methods of response. There goes along with this the possibility, which is the penalty of the play of imagery, that the associations aroused may be tangential and so non-functional, merely useless experimenting, 'random movements.'

Experience thus tends to become structural at critical points, giving rise to the image as well as to the sensation. The structural and functional aspects of the image are much further apart in the case of the image than in the case of the sensation. The image is of functional value indirectly when functional at all. Its essentially structural character, however, may be said to be the premium which is placed upon the indirectness of whatever functional value it may have. To be structural is, so to speak, the poetic license of the image. Professor James has referred to a type of mind which gets its best thinking done in the interstices of mind-wandering. It is a

question whether all thinking is not characterized more or less by the presence of a structural surd.

As to which sort of structure, sensation or image, is more frequent and prominent, especially on occasions that are not critical, would probably depend largely on individual differences, as yet not analyzed very far. Some types of mind seem to take more naturally to that form of experience known as sensational. Other types seem to cultivate more naturally play of imagery. More characteristic forms of imagery, that is, forms freer from the fringe of conceptual and affective processes, are those abstracted and made familiar by the psychological interest stimulated so widely in recent years by the questionnaire methods and data of Galton and others.

It is doubtful whether the tendency of ideational processes to take on the form of dramatic incidents and situations has been given sufficient attention in analytic psychology. Professor Cooley has discussed the matter in a most interesting and suggestive way from a genetic standpoint. After describing an instance of a child's imaginary playmate he goes on to say that "The main point to note here is that these conversations are not occasional and temporary effusions of the imagination, but are the naïve expression of a socialization of the mind that is to be permanent and to underlie all later thinking; . . . speaking broadly, it is true of adults as of children, that the mind lives in a perpetual conversation. It is one of those things that we seldom notice just because they are so familiar and involuntary; but we can perceive it if we try to. If one suddenly stops and takes note of his thoughts at some time when his mind has been running free, as when he is busy with some simple mechanical work, he will be likely to find them taking the form of vague conversations." And if he goes still further, I would add, and selects out the sense content of those vague conversations, he will be likely to find them taking a still more structural form, that of the image.

'Image' may be a very convenient term to apply to a wide range of mental processes, but there is a question as to whether it has not been given too broad an application. In some forms of educational psychology the 'image' often referred to as actually existing in the mind of the child is, I should say, distinctly hypothetical. It is the sort of consciousness the child would have *if* he could and did abstract the sense content of his experience on the occasion in question. But the chances are that he did not and probably could not do so. This is not denying the great value which the hypothetical 'image' may have as an instrument of investigation and interpretation when its hypothetical character is clearly recog-

* C. H. Cooley, 'Human Nature and the Social Order,' pp. 53-54.

nized; a value analogous, if the comparison be not too far fetched, to the imaginary quantity in mathematics.

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REVIEWS AND ABSTRACTS OF LITERATURE

Bemerkungen zur Psychologie der Gefühlselemente und Gefühlsverbindungen. M. GEIGER. *Archiv für Gesamte Psychologie.* IV. Band, 1 u. 2, Heft. V., 1904, S. 233-288.

Geiger has here made the rather original attempt to harmonize the opposing theories of Lipps and Wundt, by outlining an elaborate scheme for a logical and at the same time for a phenomenalist classification of the feelings. This can be done, the author insists, solely on the condition that one first shall have in mind a clear-cut and workable concept of a feeling element. After this is accomplished, the various relations of feelings and their numerous forms of combination will order themselves necessarily.

He divides his treatment into two parts. Part I. is devoted to a consideration of the concept of feeling elements, of the relations of the feelings as distinguished from the combination of feelings, and of the principle for the investigations of partial feelings which can, as psychic phenomena, be differentiated from the *Totalgefühl* of the momentary experience in question. Part II. is a systematic account of the kinds of relations of feelings. Affective feelings of a contrasted nature, as pleasant-unpleasant feelings have peculiar forms of relation, as likewise have tension-relief feelings. Again, logical feelings of opposing kinds, or of different kinds, lend themselves to the same mode of treatment. So, again, one can consider the kinds of relations of affective to logical feelings in the same manner. This scheme carried out in detail will exhaust all possible forms of relations or combinations of feeling. From a psychological point of view Geiger attempts to establish a theory that feelings deserve a treatment perfectly analogous to that of sensations.

The psychology of feeling has not advanced rapidly simply because this phase of mental life has been treated almost exclusively from the point of view of ethics and esthetics. The experimental task here is more difficult than is the case with sensations, but it does not, in reality, differ in kind. In the moment of their being, feelings are unanalyzable into sensations. But since they can not be analyzed as subjective *erlebniss*, some mode of conceiving them as objective content of consciousness must be devised. The method is entirely similar to that employed in the investigation of sensation complexes. Sensation is as much an abstraction as feeling can be. Any single feeling which by reflection I am able to distinguish, is but a *Merkmal* of this '*einheitlicher Gefühlserlebnisses*.' What we at any moment abstract is the single feeling from the total feeling. *Lust* and *Unlust* are only characteristics

(*Merkmale*) of the single feeling experience of the moment. But also *Lust* and *Unlust* have relation to the objective phase of our consciousness, to sensations and ideas unrelated to the elements of the *Totalgefühl*,—or the peculiar disposition of the moment. The feeling of admiration, for example, is no feeling element. It is made up of pleasure and tension which are related to an object. This is hence a *Gefühlsverbindung*, a case where two feelings make one, yet are feelings which at another time, separated, can relate themselves to an object. The feeling of depression in deep blue, being, as a constituent of a given condition, unanalyzable further, is a feeling element. Here the feeling is pure even though related to an object. The feeling of excitement Geiger, contrary to some other psychologists, insists is no elementary feeling, because it is never free from a *Lust-Unlust* moment. This illustrates his distinction between an element and a *Merkmal*.

Again the case is similar to that of sensations, where also the *Merkmale* are related to the object through the intermediation of elements. Red is a sensational element. It is immediately connected with the object. The rose is red. But the red is saturated,—not the rose. So the feeling in the inclination to drink a glass of water is a feeling of objective necessity. The necessity phase of the experience, not the doing, is subjective here. Hence the feeling element is rather the whole feeling of subjective necessity. There subjectivity alone is not a feeling element, any more than saturation is a sensational element in the above example, for it is not independent of the act. Isolatedness marks the feeling element, hence the whole feeling of subjective necessity is the element.

Clearly, according to Geiger, Wundt's dimensions are merely distinctions or determinations of groups of feeling elements. Wundt's classification is, however, purely phenomenalist, grounded neither upon the dependence of feeling upon the expression to the outer world, nor upon the consideration of the value of feeling in mental life.

Lipps has approached the question from the opposite side. Starting theoretically from the significance of feeling in mental life he seeks to determine systematically the significance of our emotional experiences. Hence he does not consider feeling elements. All feelings for him are unique. They do not have a subjective and an objective side.

For Lipps there can be no adequate description of feelings. Yet the psychologist demands some one thing common to all, and the concept of a feeling element is his first duty. In the first place, an element can have general characters. We attribute to sensation the attribute of intensity, quality, feeling-tone, etc. We arrange them in *classes*, as for example, auditory and visual. Again, the visual sensations have certain *dimensions*, such as saturation, brightness, and color-tone. Color-tone can again be subjected to classification. In a similar manner we can speak of the attributes of feeling elements. They too have intensity, quality, duration, etc. Again, for example, the quality of the feeling element has such *dimensions* as intensity, determination of direction, and feeling-character. Intensity is a continuous dimension; determination of direction, from positive through indifferent to negative, is continuous also.

Approbation or pleasure is positive, inhibition feeling is negative; and feeling of indifference, not lack of feeling, is a positive feeling of equalness or nonchalance. Thus also the feeling-characters in the same *Gefühlsgrundlage* are strictly dimensional. The feelings of pleasantness, approbation, and of the beautiful have the same *Gefühlsgrundlage*. The same fact is true in the case of the feelings of inhibition, necessity and reality. Sensations, however, have different dimensions for the distinct classes. The dimensions of feelings are the same in all *Gefühlsgrundlage*. Just as a tone sensation has its individuality or uniqueness from the peculiarity of the instrument, so all feelings have their peculiar feeling-characters. This feeling-character, in its turn, has its four dimensions, viz., feeling-modulation (*Gefühlsmodulation*), feeling complexion (*Gefühlsfärbung*), feeling accentuation (*Gefühlsbetonung*), and feeling shade (*Gefühlsnuance*). The feeling of active effort is an example of the first. It is no pure feeling, but a feeling composed of a modulating and a modulated element. The modulated, the subjective phase of such an experience, is the truer constituent, the essential element. Examples of *Gefühlsfärbung* would be desire, longing, wishing, etc. They are really fused feelings. The common feeling character here is *striving*. This is a discrete dimension. The feelings of reality and possibility again have the same dimension characters.

Feelings of accentuation include such pleasures as hearing high and low tones. They are all complex feelings made up of breadth, depth and richness. All feelings of richness, then, would fall into this dimensional division.

The feelings of shade would include chiefly those little feelings of sensory pleasure, such as that of eating fruit or drinking wine, where we have no means otherwise of expressing these differences in our experiences. In the modulation-feeling, the modulating phase or element appears as a dimension determining the modulated; in each of the others, the dimension is characteristic of all the feeling elements.

Thus all feelings must first be distinguished according to the foundation feeling (*Gefühlsgrundlage*). Next, these general feelings order themselves according to their *intensity*, objective direction and feeling character; and, finally, the feeling character according to modulation, color-tone, accentuation and shade. Suppose I am looking intently at an object: first the feeling must be classified as one in the general *Gefühlsgrundlage* of *tension—relaxation*. Here the intensity, not constant, is in one continuous dimension. Its determination of direction is clearly a positive tension, and its feeling character is effort, striving. (a) And still further, the feeling of modulation is, how I direct my attention to the object, not *vice versa*. (b) The feeling of accentuation is concerned with how I estimate the feeling of strife which relates itself to the objective being striven for. (c) The complexion of the feeling would certainly pertain to the resoluteness of the striving, and the shade of the feeling would be every sign of the striving or effort which is determined by the individual peculiarity of the object in question.

The author next outlines three moments when the solution of these

feeling elements can be accomplished, two immediately, and one mediately: first, when the dominating element of the feeling mood comes out, and can be apperceived from the background of the total feeling; second, when the special feeling frees itself sufficiently to attach itself or refer to an object; and third, when by introspective analysis it is possible to call up later elements similar to those in the present feeling.

The next task now is to classify the possible relations and combinations of feelings. This implies that two or more feelings must be in consciousness simultaneously. Combinations of feelings refer to the existing associations of feelings with the forms of expression. These the author does not consider, but limits himself to the relations of feelings, *i. e.*, to the simultaneous total feelings within the whole feeling of the moment. As a phenomenon the feeling is elementary, but theoretically it has three constituents: two conscious partial feelings and a total feeling which is not a sum but a feeling of a higher unity. Thus if one were to study the feeling of pleasant surprise, he should consider the constituents, pleasure, inhibition and tension. The connection is complicated. We have hence relations of different orders: the relation of pleasure to tension, or the relation of pleasure to surprise, which is itself a single total feeling including within it other relations of feelings; or still again, surprise may be considered as a *Gefühlsgrundlage* with an inhibition feeling as the dominating partial feeling. Here the feeling of joyful surprise, where surprise itself is a feeling of relation of two or more elemental feelings, would be a *Gefühlsverbindung* of the third order, very complex.

Here again the author limits his investigation to outlining and illustrating by examples relations of feelings of the first order. He accepts Wundt's theory, in part, of the 'gradation of elements,' and of the 'gross value of the whole'; *i. e.*, that always one partial feeling dominates, more or less modifiable by the other partial feelings, and that the total feeling is never merely the sum of the partial feelings. He considers the task here a purely morphological one of the examination and division of psychical objects.

The feelings next are classified under the general divisions of affective and logical feelings; the former being so named because of their relation to affection in general; the latter referring exclusively to such states as the feeling of reality, possibility, necessity, similarity, etc. The remainder of this very interesting article is concerned with the many possibilities of the relations of these two kinds of feeling. The relations of opposite affective feelings may result in the fusion of two partial feelings whereby a new feeling is the result, such, for example, as the feeling of pity; or there may be an interweaving (*Gefühlsverflechtung*) of the two, such as eating poor food to satisfy hunger; or where both partial feelings are preserved (*Gefühlsverwebung*), as in the case of a feeling of being melancholy; or still again where the total feeling can not exist until one partial feeling completely overcomes the other (*Gefühlsverdrängung*). Again the possible relations of affective feelings of distinctly different feeling characters may be included under the following

distinct heads, viz., condensation of feeling (*Gefühlsverdichtung*), in the feeling of surprise; penetration of two partial feelings (*Gefühlsdurchdringung*) in the feeling of power; coordination of feeling, as excitement and pleasure in bright red color; or in the great predominance of one partial resulting in a very strong total feeling (*Gefühlsüberhöhung*), as in the case of fear; or lastly in the close combination of two partials (*Gefühlsverknüpfung*) as seen above in the feeling of pleasant surprise.

The relations of logical feelings must also be classified. The opposition of feelings or inclinations (*Gefühlsentgegensetzung*) is a relation of feelings. It is not a state of mind to do this and do that at the same time; but a new feeling, composed, as are all the above, of related partial feelings, but in itself, in its unity as a feeling, presenting its own character as a *Gefühlsverbindung* of a decided kind. The feelings of similarity, possibility, probability and oppositeness exhaust all the relations of opposite logical feelings. There are perhaps few or no relations of absolutely distinct logical feelings. Perhaps the relation of the feeling of possibility to the feeling of similarity might have the relation of *Gefühlsnebeneinanderstellung*.

The only other possible relations of feelings are those of logical to affective feelings. These must either relate to the same object, or have the same conditions of origin, or one feeling must have the other for its object. In the case of the feeling of doubt, the conditions are the same for the logical feeling and for the affective feeling of unpleasantness. Here the affective may influence the logical. In the case of the pure feeling of certainty, the logical feeling may become the condition for the resulting pleasant feeling of security. This would be a *logisch-affective Gefühlsdurchdringung*. Again there can be a real feeling of pleasant possibility. The feelings must be related, as there could be no pleasure in pure possibility as such.

This stage marks the limits of the present inquiry. The next task, the author thinks, is to pursue the same method of classification in regard to the more complex relations of feelings and to all the kinds of the above defined combinations of feelings.

This article raises one point of greatest psychological interest and importance. Is the psychologist forced to make use of two fundamental and ultimate elements, sensation element and feeling element? Can all psychic states, the feeling phases as well as the sensation characters, be satisfactorily described in our phenomenalist account, if we have as a presupposition two independent disparate elements? Is there any meaning in calling the subjective phase of experience, phenomenon? Yet, if not, have we at all considered that which does really seem to belong to every psychic state which we can ever attempt to examine? Geiger himself declares that the subjective feeling is the 'truer constituent.' Professor James in his analysis of attention finds the inevitable resultant, the 'feeling of effort,' the 'feeling as if I did it,' always present, but also always unaccounted for by any physiological reference. Also in the phenomenon of memory, the 'feeling that it is

mine' of the memory image, has apparently no physiological correlate; while in the psychology of will, the 'fiat' remains unexplained. Here this kind of psychology, for him, must 'throw up the sponge.' For this kind of phenomena Wundt must construct his feeling element, and finds the explanation through his apperception principle. Many other psychologists can not feel satisfied in a description and explanation where no one common element is accepted as a basis. For Professor Münsterberg all psychological material must be reduced to some form of sensation complex, if our explanation and description shall be thoroughgoing and strictly phenomenistic. Hence for him, feelings, only in so far as they can be conceived as objects, and to just such an extent, can be considered in a scientific treatment. To Professor James this is all that is possible, but still not sufficient. To Wundt, the psychological field is apparently conceived as more inclusive than Professor Münsterberg's limitations allow; and hence the need of a new and similarly ultimate element of description for this included field.

The above article would indicate that Geiger is disposed to take much the same position I understand to be Wundt's. The psychology of feeling thus seems to involve important epistemological presuppositions, as well as difficult puzzles of psychological method and classification.

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L'amnésie et la dissociation des souvenirs par l'émotion. DR. PIERRE JANET, *Journal de Psychologie normale et pathologique*, September-October, 1904, I., No. 5. Pp. 417-453.

Irene, a neurasthenic child of a neurasthenic mother and of a degraded drunkard, became hysterical after the death of her mother. During the sixty days preceding her mother's death, Irene endured very unusual fatigue and frequent scenes of the most painful character with her father.

The essential features of her disease seem to be *hypermnnesia* during attacks of somnambulism, occurring several times a day, and lasting several hours, and *retrograde amnesia* during the rest of the time. *Hypermnnesia* and *amnesia* bear upon the same events, *i. e.*, upon the death of her mother and the events of the two and a half months preceding and of the three months following. During the attacks of somnambulism she is on her bed gesticulating, shrieking and speaking with more or less coherence: "One does not know how hard it is to be without a mother. . . . Is it not better that I, too, should die, mother dear? You said we would die together. . . . There is a thing one can not pardon him for [the father], he was drunk the day of mother's death. . . . No, it was too horrid; he threw up on the bed . . . etc." She mentions in this way, and often with minute particulars, the events she can not recall in her more normal state. The same memories also appear in the form of hallucinations and impulses which interrupt suddenly and only for an instant the stream of her ordinary consciousness.

Neither the *hypermnnesia* nor the *amnesia* is sharply limited.

The fact upon which Janet desires to call attention is that the mental contents during the attacks are precisely those which are forgotten the rest of the time. A close dependency seems, therefore, to exist between the hypermnnesia and the amnesia. The author had already made a similar observation in the case of Mme. D., and he had then produced a decrease of the amnesia in proportion as he succeeded in breaking up the fixed idea.

In the case of Irene, the reversed experiment was tried: the removal of the amnesia in the hope of causing the disappearance of the automatic memories in somnambulism. His plan was to reintroduce the lost ideas in the ordinary life by means of suggestions made during hypnosis. But, to his surprise, the hypnotic sleep did not bring back the lost memories. It was not the same state of consciousness as somnambulism. He had, therefore, to pass through the preliminary step of educating the hypnotic memory, a long and tedious process involving, (1) the direction of the thoughts of the subject to the events one would like him to remember, and (2) helping him to make efforts of attention, inspire him with hopes of success, etc., *i. e.*, increasing the psychological tension. This second part of the process is considered, as the readers of the works of Janet know, as most important in the treatment of neurasthenic persons. If he chose to have the remembrances pass through an intermediary step instead of attempting from the first to reawaken the dormant memories in the ordinary state itself, it is because it was easier for him to direct and hold the attention of the patient when she was hypnotized.

The lost past came back bit by bit and, with some exceptions, according to the law of Ribot: the older memories first. But it should not be thought that a thing once remembered in hypnosis was never again forgotten in that state. On the contrary, if several days elapsed between the treatments, she usually suffered a loss. Moreover, emotional disturbances brought about a return to her old condition. This happened, for instance, at the death of her godson, at that of her father, etc.

The fact most worthy of attention is that the hypermnnesia and the amnesia disappeared and reappeared synchronously. Janet concludes from this observation, and from at least four others which he mentions, that 'the disorder has two faces, (1) incapacity on the part of the patient to recall at will certain past experiences, (2) automatic and irresistible reproduction of these same experiences which assume an exaggerated and independent development.' This *syndrome* constitutes one of the forms which hysteria may assume under the influence of violent emotion.

Such are, in the main, the facts. In the two concluding sections of the paper, Janet takes up once more the problems upon which he has already thrown much light in his anterior publications—the relation of memory to the larger whole we call the self and to the 'tension psychologique.'

We may be allowed to dwell at greater length upon the explanation of the problem presented by Irene than is customary in the summary of an article, for we have here an application of a theory which, by the definiteness and thoroughness it assumes in the hands of our author, marks a step in advance in our understanding of psychic life.

Irene's trouble is not one of memory only. It is just as much a disease of the will. She might have lost a part of her past and yet behave normally, but she does not. She can not perform the actions called for by her circumstances, she treats the world as if it was not real. "I feel as if I was not alive," she says. "I walk without purpose; I do everything mechanically. You ask me why I do not do anything; I do not know. I can not any more be useful to any one; I do not take interest in anything, etc." As a matter of fact she did not do any of the pressing actions called for by the death of her mother.

The remembrances, however, exist potentially and they may be actualized, but *not voluntarily, neither can they be voluntarily inhibited*. That is to say, the self can not appropriate them, can not make them part of its conscious life. If they reappear, it is automatically and outside the field of the subject's ordinary self-consciousness.

When the amnesia disappears, Irene regains the power of reacting properly to the calls of the world. She is again active, resumes her trade, arranges her life, etc., and—remark worthy of note—although she now remembers the gruesome tragedy through which she has passed, she has a feeling of wellbeing unknown to her before.

Amnesia and aboulia go hand in hand. The memory-loss of which Irene suffers is of the things which should call forth the very actions she is now unable to perform, and so Janet ventures the statement that the difficulty, or the impossibility, on the part of the patient to recall at will certain events is due to her inability to perform the action which would be called for by these events. This relation between action and memory accounts, according to our author, for the often-observed fact called retrograde amnesia. The more recent events are those most liable to disappear from memory because "recent memories are those closer to the present reality, they have a more direct and definite part in the present deeds, they have not yet lost in retrogression their high degree of psychological tension."

The trouble from which Irene suffers may then be said to be a general decrease in 'psychological tension,' from which arises first the deterioration, or the loss, of the psychic functions which are highest in the hierarchical scale, *i. e.*, first and chiefly what our author calls the '*fonction du réel*' and voluntary activity, especially when directed towards new adaptations.¹

We have in the theory here referred to of the distinguished professor of the Collège de France an understanding of the relation of the various psychic functions nearer the truth than are the intellectual and the affective theories which, until recently, ruled in psychiatry as well as in normal psychology. It surpasses, moreover, in breadth and in definiteness of conception the voluntaristic theories with which I am acquainted.

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¹ See for an exposition of the hierarchy of the psychic functions, *Les Obsessions et la Psychasthénie*, pp. 474 and ff.

Untersuchungen über den galvanischen Lichtreflex. BUMKE. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane.* 1904, Bd. 36, S. 294-299.

Weak galvanic currents of 1/50 of a millampère, passing through the eye-ball, have long been known to produce a faint sensation of light: and the writer has previously shown that slightly stronger currents have in addition a pupillomotor effect. In order to study this effect the author applies one electrode to the temple (or for the consensual reaction directly over the eye), the other to the sternum or the palm of the hand; and observes the pupil through the Zehender-Westien binocular magnifier. There were examined 29 healthy and 87 unhealthy persons. On the average a current of 2.4 milliampères on closure at the anode will cause both pupils to contract 1 to 2 mm. (in diameter?). The strength needed for this varies with the individual from 0.7 to 5.0 milliampères. The contraction is like that caused by a faint light stimulus, and like this is followed by a slight expansion. Breaking the current at the cathode is the next most efficient stimulus after making it at the anode. The sensation of light appears to precede the pupillary reflex. In some individuals the consensual reaction is slightly later than the direct, but in rather more individuals no such difference could be detected. Fatigue lowers the threshold for the electrically stimulated light sensation and raises that for the pupillary reflex: "that is, an individual who to-day has the sensation from a current of 0.1 and the iris reflex from one of 0.2 milliampère, will, after going without sleep for a night, perceive light from a current of 0.08 and give the pupillomotor reflex only for one of 3.2 milliampères." The reason for this is not clear. "We must be contented to record that the same factors which *impair* the *subcortical* paths of conduction, are in same way able to *enhance* the irritability of the *cortical centers*."

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JOURNALS AND NEW BOOKS

THE MONIST. January, 1905. Vol. XV., No. 1. *The Principles of Mathematical Physics* (pp. 1-24): HENRI POINCARÉ. - The author mentions six fundamental postulates on which physical science is based. They are: (1) Conservation of energy; (2) Degradation of energy; (3) Equality of action and reaction; (4) Relativity—making impossible the detection of absolute motion; (5) Conservation of mass; (6) Least action. The body of the article consists in a criticism of these postulates, with a view to the possibility of their revision, in the light of recent scientific discoveries. *Meaning of the Epithet Nazorean (Nazarene)* (pp. 25-45): WILLIAM BENJAMIN SMITH. - The author cites numerous passages to prove that the epithet Nazarene is not derived from a supposed village called Nazareth, the existence of which is very doubtful, but from the Old-Semitic stem meaning 'preserve.' *The Passing of Scientific Materialism*

(pp. 46-86): C. L. HERRICK. - An interesting and elaborate criticism of Atomism and Plenism, and a plea for the abandonment of both of these forms of Materialism in favor of the theory of Energism. *Did the Monks preserve the Latin Classics?* (pp. 87-108): WILLIAM BIRNEY. - The author argues that the monks, prior to the twelfth century, had no interest in the classics and did not preserve them; that the volumes found in the monasteries are fewer than is commonly supposed, and usually came there by gifts and bequests of lay scholars. *Icelandic Literature* (pp. 109-114): A. H. GUNLOGSEN. - An account of the different races—Tartar, Scandinavian, Teuton, Celt—who have in varying degrees built up the Icelandic nation and its literature. *The Christian Doctrine of Resurrection* (pp. 115-119): EDITOR. - An expression of cordial approval for Canon Henson's recent rejection of the literal interpretation of the Resurrection. *An Ancient Moslem Account of Christianity* (pp. 120-123): A. J. EDMUNDS. - The account is probably based on Apocryphal sources. *Infinitude as a Philosophical Problem—Comments upon Professor Keyser's View* (pp. 124-129): EDITOR. - Admitting that Keyser is right in holding—as against Russell and Royce—that the existence of a concrete infinite can not be proved, we may still believe in infinitude as a real aspect of every process. *Literary Correspondence. France* (pp. 130-142): LUCIEN ARRÉAT. Criticisms and Discussions: *An International Auxiliary Language*: LOUIS COUTURAT. *A Reply*: EDITOR. *Suggestions Concerning Pasigraphy*: WALTER T. SWINGLE. *The Power of Political Institutions as a Factor in the Determination of the World Language*: CHARLES W. SUPER. *Clarence L. Herrick—Obituary*. Book Reviews: William Rainey Harper, *Religion and the Higher Life*. Herbert Nichols, *A Treatise on Cosmology*. Paul Haupt, *Kohélet oder Weltschmerz in der Bibel*. Alfred Leicht, *Lazarus, der Begründer der Völkerpsychologie*. Wilhelm Wundt, *Völkerpsychologie*. A. Silberstein, *Leibnizens Apriorismus im Verhältnis zu seiner Metaphysic*.

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE. Bd. XL, Heft 1, November, 1904. *Zur Textgeschichte und Textkritik der ältesten Lebensbeschreibung Benedikt Despinosas* (pp. 1-34): S. v. DUNION-BORKOWSKI. - A discussion as to the appearance of successive editions of Lucas's life of Spinoza, with textual revision. *Karl Steffensen und seine Geschichtsphilosophie* (pp. 35-64): H. RENNER. - Steffensen combined the theories of Kant with those of Schelling. In his logic of history he anticipated the most recent discussions. Ideas are purposes and powers stronger than our thoughts, molding them in the course of history. He anticipated Nietzsche's doctrine of the 'Übermensch,' but with a nobler form of it. History, he said, is the field of the accidental. *Die Atomistik und Faraday's Begriff der Materie* (pp. 65-112): O. BUCK. - Faraday insisted that science is concerned with facts; philosophy with theories. The atom, he held, is a theory and not a fact; useful—but not real. He emphasized the fundamental character of the concept *force* in Physics. The atom, implying an absolute or infinite harness or resistance, negates thereby the continuity of thought. Faraday's theory

approached that of Boskowitch. Matter, he said, is continuous; the lines of force lie around a center which is the substance, and form through the union of such centers a continuous mass with the several properties of matter (Schussfolgt). *Jahresbericht; Eine indische Ästhetik* (pp. 113-134): A. DYROFF. - This is a notice of H. Jacobi's translation of 'Anandavardhana's Dhvanyaloka' (Die Prinzipien der Poetik). This Hindoo treatment is comparable to that of Aristotle; yet there is every reason to suppose that it was achieved under the influence of Indian thought alone. *Die Neueste Erscheinungen. Eingegangene Bücher.*

REVUE PHILOSOPHIQUE. December, 1904. *L'Immoralité de l'Art* (pp. 553-582): F. PAULHAN. - Morality is perfect systematization of all our activities: art is partial systematization of our activities, caring not if it defeats many practical aims. It does not transform the world, but turns from it to an imagined world, thus getting a fictitious and unhealthy satisfaction which paralyzes practical activity. *La Vie sociale* (pp. 583-601): J. DELVAILLE. - The extreme complexity of society makes the organism-theory inadequate; it develops spasmodically, returning often to earlier stages. Social development starts from within, from exceptional individuals, as well as from the influence of environment and from that of scientific progress. It can be studied only from the historic point of view. *Des Mystiques en dehors de l'Extase* (pp. 602-625): B. DE MONTMORAND. - The emotions of mystics, oscillating between extreme joy and pain, imperfectly verify the James-Lange theory. Ecstatic joy is often accompanied by the physiological signs of grief. *La Philosophie et la Psychologie au Congrès de Cambridge* (pp. 626-629): N. VASCHIDE. *Le Congrès International d'Histoire des Religions* (pp. 630-637): F. PICAVET. *Revue générale: La Mémoire affective* (pp. 639-654): L. DUGAS. *Analyses et Comptes Rendus: J. Dewey, Studies in Logical Theory: T. RIBOT. E. Schrader, Zur Grundlegung der Psychologie des Urtheils: G. H. LUQUET. Revue des Périodiques étrangers. Livres déposés. Table des Matières du Tome LVIII.*

REVUE PHILOSOPHIQUE. January, 1905. *La Raison pure pratique doit-elle être critiquée?* (pp. 1-33): A. FOUILLÉ. - Kant questions the theoretical use of the reason but not the practical use. He dogmatically assumes the validity of universal moral law. It is however as much open to doubt as the metaphysic against which Kant argued. *De la Méthode dans les Recherches des Lois de l'Éthique* (pp. 34-45): G. SPILLER. - Theories in Ethics should be experimentally verified as in other sciences. We should experiment with non-resistance, severity, etc., to test their ethical value. Introspective analysis of the dictates of conscience shows them to be based on a complex of motives such as prudence, love of peace, egoism, etc. Other epochs and races, too, must be studied. *Essais d'Esthétique empirique: l'Individu devant l'Œuvre d'Art* (pp. 46-60): VERNON LEE. - Observations of the writer's pupils on the attitude of the individual to masterpieces of sculpture or painting, followed by the writer's more technical description. *Revue générale: Le Conflit de la*

Sociologie et de la Morale philosophique (pp. 61-85): G. RICHARD. *Analyses et Comptes Rendus*: A. Binet, *L'Année Psychologique*: B. BOURDON. E. Lauvrière, *E. Poe, Vie et son Œuvre*: L. ARRÉAT. Vigouroux et Juguelier, *La Contagion mentale*: N. VASCHIDE. L. Marchand, *Le Gout*: N. VASCHIDE. Havelock Ellis, *A Study of British Genius*: L. ARRÉAT. Havelock Ellis, *Studies in the Psychology of Sex*: B. O. Dittrich, *Grundzüge des Sprachpsychologie*: B. J. Mourly-Vold, *Ueber 'Hallucinationen,' etc.*: N. VASCHIDE. G. Simmel, *Kant*: J. SEGOND. Observations et Documents. Revue des Périodiques étrangers. Livres déposés.

De Gaultier, Jules. *Nietzsche et la reforme philosophique*. Paris: Société du Mercure de France. 1904. 12mo. Pp. 312.

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Gottschalle, H. *Weltwesen und Wahrheitwille*. Ein Zwiegespräch mit dem Leben. Stuttgart: Stricker und Schröder. 1905. 8vo. Pp. viii + 464. 8 M.

Heymans, G. *Einführung in die Metaphysik*. Leipzig: J. A. Barth. 1905. 8vo. Pp. viii + 348. 9.40 M.

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Kleinpeter, H. *Die Erkenntnistheorie der Naturforschung der Gegenwart*. Unter Zugrundelegung der Anschauungen von Mach, Stallo, Clifford, Kirschhoff, Hertz, Pearson, und Ostwald. Leipzig: J. A. Barth. 1905. 8vo. Pp. xii + 156. 3.80 M.

Stein, Ludwig. *Der soziale Optimismus*. Jena: Hermann Costenoble. 1905. 8vo. Pp. vi + 266. 5 M.

NOTES AND NEWS

THE section of anthropology and psychology of the New York Academy of Sciences met in conjunction with the New York section of the American Psychological Association at the American Museum of Natural History, New York City, on Monday afternoon and evening, January 30, 1905. The following papers were read: 'Color Preferences,' R. S. Woodworth and Frank Bruner; 'The Relation of Intensity of Sensation to Attention,' M. Tsukahara; 'Ideas and Temperaments,' Dickinson S. Miller; 'Organic Levels in the Evolution of the Nervous System,' Robert MacDougall; 'Note on Number Habit,' Robert MacDougall; 'Relational Theories of Consciousness,' W. P. Montague; 'Radical Empiricism and Wundt's Philosophy,' Charles H. Judd.

MR. THOMAS CASE, Waynflete professor of moral and metaphysical philosophy, Oxford, and fellow of Magdalen, has been elected president of Corpus Christi College, in succession to the late Dr. Fowler.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE ESSENCE OF HUMANISM

THE fact that the January number of *Mind* contains two articles that continue the humanistic (or pragmatistic) controversy, and one that deeply connects with it, makes it more evident than ever that humanism is a ferment that has 'come to stay.' It is not a single hypothesis or theorem, and it dwells on no new facts. It is rather a slow shifting in the philosophic perspective, making things appear as from a new center of interest or point of sight. Some writers are strongly conscious of the shifting, others half unconscious, even though their own vision may have undergone much change. The result is no small confusion in debate, the half-conscious humanists often taking part against the radical ones, as if they wished to count upon the other side.¹

If humanism really be the name for such a shifting of perspective, it is obvious that the whole scene of the philosophic stage will change in some degree if humanism prevails. The emphasis of things, their foreground and background distribution, their sizes and values, will not keep just the same.² If such pervasive consequences be involved in humanism, it is clear that no pains which philosophers may take, first in defining it, and then in furthering, checking, or steering its progress, will be thrown away.

It suffers badly at present from incomplete definition. Its most

¹ Professor Baldwin, for example. His address 'Selective Thinking' (*Psychological Review*, January, 1898, reprinted in his volume, 'Development and Evolution') seems to me an unusually well written pragmatic manifesto. Nevertheless in 'The Limits of Pragmatism' (*ibid.*, January, 1904), he (much less clearly) joins in the attack.

² The ethical changes, it seems to me, are beautifully made evident in Professor Dewey's series of articles, which will never get the attention they deserve till they are printed in a book. I mean: 'The Significance of Emotions,' *Psychological Review*, Vol. II., 13; 'The Reflex Arc Concept in Psychology,' *ibid.*, III., 357; 'Psychology and Social Practice,' *ibid.*, VII., 105; 'Interpretation of Savage Mind,' *ibid.*, IX., 217; 'Green's Theory of the Moral Motive,' *Philosophical Review*, Vol. I., 593; 'Self-realization as the Moral Ideal,' *ibid.*, II., 652; 'The Psychology of Effort,' *ibid.*, VI., 43; 'The Evolutionary Method as Applied to Morality,' *ibid.*, XI., 107, 353; 'Evolution and Ethics,' *Monist*, Vol. VIII., 321; to mention only a few.

systematic advocates, Schiller and Dewey, have published fragmentary programs only; and its bearing on many vital philosophic problems has not been traced except by adversaries who, scenting heresies in advance, have showered blows on doctrines—subjectivism and scepticism, for example—that no good humanist has entertained. By their still greater reticences, the anti-humanists have, in turn, perplexed the humanists. Much of the controversy has involved the word ‘truth.’ It is always good in debate to know your adversary’s point of view authentically. But the critics of humanism never define exactly what the word ‘truth’ signifies when they use it themselves. The humanists have to construct its meaning; and the result has doubtless been much beating of the air. Add to all this great individual differences in both camps, and it becomes clear that nothing is so urgently needed, at the stage which things have reached at present, as a sharper definition by each side of its central point of view.

Whoever will contribute any touch of sharpness will help us to make sure of what’s what and who is who. Any one can contribute such a definition, and, without it, no one knows exactly where he stands. If I offer my own provisional definition of humanism now and here, others may improve it, some adversary may be led to define his own creed more sharply by the contrast, and a certain quickening of the crystallization of general opinion may result.

I

The essential service of humanism, as I conceive the situation, is to have seen that *though one part of our experience may lean upon another part to make it what it is in any one of several aspects in which it may be considered, experience as a whole is self-containing and leans on nothing.*

Such a formula needs abundant explication to make it unambiguous. It seems, at first sight, to confine itself to denying theism and pantheism. But, in fact, it need not deny either; everything would depend on the exegesis; and if the formula ever became canonical, it would certainly develop both right-wing and left-wing interpreters. I myself read humanism theistically and pluralistically. If there be a God, he is no absolute All-Experiencer, but simply the experienter of widest finite conscious span. Read thus, humanism is for me a religion susceptible of reasoned defense, though I am well aware how many minds there are to whom it can appeal religiously only when it has been monistically translated. Ethically the pluralistic form of it takes for me a stronger hold on reality than any other philosophy I know of—it being essentially a *social* philosophy,

a philosophy of '*co*,' in which conjunctions do the work. But my primary reason for advocating it in philosophical journals is its matchless intellectual economy. It gets rid, not only of the standing 'problems' that monism engenders ('problem of evil,' 'problem of freedom,' and the like), but of other metaphysical mysteries and paradoxes as well.

It gets rid, for example, of the whole agnostic controversy, by refusing to entertain the hypothesis of trans-empirical reality at all. It gets rid of any need for an Absolute of the Bradleyan type (avowedly sterile for intellectual purposes) by insisting that the conjunctive relations found within experience are faultlessly real. It gets rid of the need of an Absolute of the Roycean type (similarly sterile) by its pragmatic treatment of the problem of knowledge, a treatment of which I have already given a version in two very inadequate articles in this JOURNAL for last year.³ As the views of knowledge, reality and truth imputed to humanism have been those so far most fiercely attacked, it is in regard to these ideas that a sharpening of focus seems most urgently required. I proceed therefore to bring the views which I impute to humanism in these respects into focus as briefly as I can.

II

If the central humanistic insight, which I have already printed in italics, be accepted, it will follow that, if there be any such thing at all as knowing, the knower and the object known must both be portions of experience. One part of experience must, therefore, either

(1) Know another part of experience—in other words, parts must, as Professor Woodbridge says,⁴ represent *one another* instead of representing realities outside of 'consciousness'—this case is that of conceptual knowledge; or else

(2) They must simply exist as so many ultimate *thats* or facts of being, in the first instance; and then, as a secondary complication, and without doubling up its entitative singleness, any one and the same *that* must figure both as a thing known and as a knowledge of the thing, by reason of two divergent kinds of context into which, in the general course of experience, it gets woven.⁵

This second case is that of sense-perception. There is a stage of thought that goes beyond common sense, and of it I shall say more

³ 'Does Consciousness Exist?' and 'A World of Pure Experience,' Vol. I., 447, 533, 561.

⁴ In *Science*, November 4, 1904, p. 599.

⁵ This statement is probably excessively obscure to any one who has not read my two articles above referred to, especially the first one, 'Does Consciousness Exist?'

presently; but the common-sense stage is a perfectly definite halting-place of thought, primarily for purposes of action; and, so long as we are on the common-sense stage of thought, object and subject *fuse* in the fact of 'presentation' or sense-perception—the pen and hand which I now *see* writing, for example, *are* the physical realities which those words designate. In this case there is no self-transcendency implied in the knowing. Humanism, here, is only a more comminuted *Identitätsphilosophie*.

In case (1), on the contrary, the representative experience does transcend itself in knowing the other experience that is its object. No one can talk of the knowledge of the one by the other without seeing them as numerically distinct entities, of which the one lies beyond the other and away from it, along some direction and with some interval, that can be definitely named. But, if the talker be a humanist, he must also see this distance-interval concretely and pragmatically, and confess it to consist of other intervening experiences—of possible ones, at all events, if not of actual. To call my present idea of my dog, for example, cognitive of the real dog *means* that, as the actual tissue of experience is constituted, the idea is capable of leading into a chain of other experiences on my part that go from next to next and terminate at last in vivid sense-perceptions of a jumping, barking, hairy body. Those *are* the real dog, the dog's full presence, for my common-sense. If the supposed talker is a profound philosopher, although they may not *be* the real dog for him, they *mean* the real dog, that real dog for him being a lot of atoms, say, or of mind-stuff, that lie *where* the sense-perceptions lie in his experience as well as in my own.

III

The philosopher here stands for the stage of thought that goes beyond the stage of common-sense; and the difference is simply that he 'interpolates' and 'extrapolates,' where common-sense does not. For common-sense, two men see the same identical real dog. Philosophy, noting actual differences in their perceptions, points out the duality of these latter, and interpolates something between them as a more real terminus—first, organs, viscera, etc.; next, cells; then, ultimate atoms; lastly, mind-stuff perhaps. The original sense-termini of the two men, instead of coalescing with each other and with the real dog-object, as at first supposed, are thus held by philosophers to be separated by invisible realities with which, at most, they are conterminous.

Abolish, now, one of the percipients, and the interpolation changes into 'extrapolation.' The sense-terminus of the remaining per-

ipient is regarded by the philosopher as not quite reaching reality. He has only carried the procession of experiences, the philosopher thinks, to a definite, because practical, halting-place somewhere on the way towards an absolute truth that lies beyond.

The humanist sees all the time, however, that there is none but a pragmatic transcendency even about the more absolute realities thus conjectured or believed in. They keep to the original common-sense schematism and simply carry it a little farther out. They transcend sense-perception in no other sense than that in which this latter transcends conception. The viscera and cells are only percepts following in order upon the hairy body. The atoms again, though we may never attain to human means of perceiving them, are still defined perceptually. The mind-stuff itself is conceived of as a kind of experience; and it is possible to frame the hypothesis (such hypotheses can by no logic be excluded from philosophy) of two knowers of a piece of mind-stuff and the mind-stuff itself becoming 'confluent' at the moment at which our imperfect knowing might pass into knowing of a completed type. Even so do we habitually represent our two perceptions and the real dog as confluent, though only provisionally, and for the common-sense stage of thought. If my pen be inwardly made of mind-stuff, there is no confluence *now* between that mind-stuff and my visual perception of the pen. But conceivably there might come to be; for, in the case of my hand, the visual sensations and the inward feelings of the hand, its mind-stuff, so to speak, are even now as confluent as any two things can be.

There is, thus, no breach in humanistic epistemology. Whether knowledge be taken as ideally perfect, or only as sufficiently true for practice, it is hung on one continuous scheme. Reality, howsoever remote, is always defined as a terminus within the general possibilities of experience; and what knows it is defined as an experience that 'represents' it, in the sense of being substitutable for it in our thinking because it leads to the same associates, or in the sense of 'pointing to it' through a chain of other experiences that either intervene or may intervene.

Absolute reality here functions for philosophy just as sensation functions for common-sense. Both are to be conceived as experiential termini, actual or possible, sensation being only the terminus at which the practical man habitually stops. These termini, for the practical and the theoretical stages of thought respectively, are self-supporting. They are not 'true of anything else, they simply *are*, are *real*. They 'lean on nothing,' as my italicized formula said. Rather does the whole fabric of experience lean on them, just as the whole fabric of the solar system, including many relative positions, leans, for its absolute position in space, on any one of

its constituent stars. Here, again, one gets a new *Identitätsphilosophie* in pluralistic form.

IV

If I have succeeded in making this at all clear (though I fear that brevity and abstractness between them may have made me fail), the reader will see that the 'truth' of our mental operations must always be an intra-experiential affair. A conception is reckoned true by common sense when it can be made to lead to a sensation. The sensation is held to be provisionally true by the philosopher just in so far as it *covers* (abuts at, or includes the place of) a still more absolutely real experience, in the possibility of which to some remoter experient the philosopher finds reason to believe.

Meanwhile what actually does count for true to any individual trower, whether he be philosopher or common man, is always a result of his *apperceptions*. If a novel experience, conceptual or perceptual, contradict too emphatically our preexistent system of beliefs, in ninety-nine cases out of a hundred it is treated as false. Only when the older and the newer experiences are congruous enough to mutually apperceive and modify each other, does what we treat as an advance in truth result. Having written of this point in an article in reply to Mr. Joseph's criticism of my humanism in the January *Mind*, which article I hope may itself appear in *Mind* ere long, I will say no more about truth here, but refer the reader to that review. In any case, it is certain that truth consists in no relation between our experiences and something archetypal or transexperiential. Should we ever reach absolutely terminal experiences, experiences in which we all agreed, which were superseded by no revised continuations, these would not be *true*, they would simply *be*, and be indeed the angles, corners, and linchpins of all reality, on which the truth of everything else would be stayed. Only such *other* things as led to these by satisfactory conjunctions would be true. Satisfactory connection of some sort with such termini is all that the word 'truth' means. On the common-sense stage of thought sense-presentations serve as such termini. Our ideas and concepts and scientific theories pass for true only so far as they harmoniously lead back to the world of sense.

I hope that many humanists will endorse this attempt of mine to trace the more essential features of that way of viewing things. I feel almost certain that Messrs. Dewey and Schiller will do so. If the attackers will also take some slight account of it, it may be that discussion will be a little less wide of the mark than it has hitherto been.

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THE NATURE OF CONSCIOUSNESS¹

THE motives which influence one interested in definitions to attempt a definition of consciousness are at present so obvious that I shall not stop to discuss them. I should like, however, by way of introduction, to indicate the point of departure from which the definition should, in my opinion, be attempted.

Locke and Kant conceived consciousness to be a kind of receptacle or receptivity set over against the things which were to give it a content. Huxley in his essay on 'Sensation and the Sensiferous Organs' appears to have a similar conception. Indeed, it is mainly after this manner that consciousness has been conceived and discussed in modern theories. Yet it seems to be quite impossible to find out anything verifiable about consciousness from the point of view of this conception, because we are not able to produce an instance of the distinction between consciousness and other things which it involves. Consciousness is never discovered as one thing set over against other things which are not already its content. Consequently it seems futile to suppose that it is, and then proceed to build up a theory about it. As it is found to exist only when it has a content, I shall take my point of departure from that fact, and speak of the type of existence involved as 'objects in consciousness.'

No doubt this type of existence has had a history. It may have been much simpler than it is at present. But what it was like in its simpler form is so clearly an inference from what it is in its developed form, that I can not regard the inference as the proper point of departure for a definition of the type of existence on which the inference depends. I therefore dismiss consideration of the conditions out of which our conscious experience may have developed. I take objects in consciousness or consciousness of objects as just that kind of existence which each one can identify and analyze for himself as readily as he would analyze a plant or a rock.

The objects of consciousness may be as varied and as variable as you please. They may be men and trees, reds and what we call mere ideas, present facts and remembered happenings, reasonings and discussions, pains, pleasures, emotions and volitions; they may even constitute what we call the self: but all, without exception, stand out as the objects *of which* there is consciousness, but never as the consciousness itself. Just as objects in the light are not the light, so objects in consciousness are not the consciousness. There is thus a distinction between consciousness and its objects. The

¹ Read before the American Philosophical Association, December 29, 1904.

distinction has often been denied on the ground that we can not distinguish in a given perception between object and perceiving. Perhaps we can not, but we do distinguish between different perceptions. It is this fact, that different perceptions or objects exist together and are yet distinguished as different, which constitutes a recognizable and definable distinction between consciousness and its objects. It is the distinction involved in the existence of different things together.

Such a type of existence is very common. The three most noticeable instances of it, other than consciousness, are things in space, events in time, and individuals in species. Space is distinguished from the things in it, not by taking these things in isolation, but by taking them together as different things in space. The same is true of time and species. We have, in these instances, a distinction like that between consciousness and its objects. Consciousness should, therefore, be defined as the same general type of existence as space, time or species. Its nature is akin to theirs.

Some suggestive conclusions may be drawn from this fact which throw a clarifying light on several controverted questions. The relation of the world of which there is consciousness to consciousness involves the same kind of problems as the relation of objects in space to space, or the events in time to time. We do not ask if space and time affect their objects causally. We should not raise the question of the causal efficiency of consciousness. We do not ask how things get into space, so we should not ask how objects get into consciousness; if we thereby imply, in any way, the previous separate existence of the two. Just as it is possible to find out about things much that is interesting which does not depend on the fact that they are in space, so also it is possible to find out much that is interesting about objects which does not depend on the fact that they are in consciousness. And just as we may have a body of knowledge built up from the fact that things are in space, so we may have a body of knowledge built up from the fact that objects are in consciousness. Finally one who has recognized that in consciousness we have simply an instance of the existence of different things together, will not engage in the controversies which are suggested by such terms as 'automatism,' 'interactionism,' 'parallelism,' 'agnosticism' and their kindred. Indeed, he will have to renounce many so-called metaphysical pleasures.

The type of existence to which consciousness belongs makes it evident at once that there is little propriety in speaking of objects as 'states of consciousness.' So to characterize them involves a deal of speculation which has ultimately to reckon with the difference between consciousness and its objects, and account for it.

I am, by no means, immediately aware of objects as states of consciousness any more than I am aware of things as states of space. Thus the axiom of Locke that 'the mind in all its thoughts and reasonings hath no other immediate object but its own ideas,' an axiom which has been the central principle of most modern philosophy through Hegel and since, has at best only a highly speculative warrant.

When things exist together, that which constitutes their being together is some sort of continuum. Consciousness may be defined, therefore, as a kind of continuum of objects. From this definition an important aspect of consciousness can be deduced, namely, the isolation of any individual consciousness. Two continuums of the same kind can not be parts of each other. They stand over against each other as closed systems, so to speak. The spaces and times of our dreams are not interchangeable with those of our waking moments. Two species are not interchangeable. Two consciousnesses also are not interchangeable. They refuse to be systematized or even grouped together under a common continuum of the same sort. We can not relate them to each other, therefore, in the ways we relate different objects to each other. We can relate them only indirectly, never directly. Another's consciousness is never given as a part of mine or related to mine in anything like the way his body is related to my body. I get into relations with his consciousness indirectly by means of his body. While his body may be in my consciousness, his consciousness never is, but is inferred by me to be in his body. The necessity of thus indirectly relating different consciousnesses to each other, or, what is the same thing, of relating the objects of one consciousness to a second consciousness is the foundation on which most theories of perception are based. The expectation of ever getting rid of this indirection by means of such a theory seems to me, therefore, to be without justification. If this is true, all speculation about the nature of consciousness which is based on theories of perception is in great danger of arriving at no verifiable results.

Besides the type of isolation just noted, consciousness has other characters, such as infinity, which are common to all continuums. I pass these by, for the present, in order to note the distinctive character of that form of continuity or connection which we have when objects are in consciousness. In this form, they become grouped and systematized in a manner quite different from their grouping in any other form. They become representative of each other. Note that it is *of each other* that they become representative, but not of anything else. They are not ideas which represent things, or phenomena which represent noumena, or things in the body which repre-

sent things outside, or states of consciousness which represent an external world. It is each other that they represent, as bread represents nourishment. Because of such representation, all our knowledge is built up; and I am not acquainted with any body of verifiable and generally accepted knowledge which is built up in any other way. All science deals solely with the systematization of this representative value of the things with which it is concerned.

The peculiar way in which consciousness connects the objects in it is, thus, the way of knowledge actual or possible. Objects are connected in consciousness in such a way that they become known. It is important to note that, while this is so, the knowledge is wholly determined in its content by the relations of the objects in consciousness to one another, not by the relation of consciousness to the objects. This latter may be the relation which makes the knowledge possible, but it is not the relation which determines what the knowledge is. In other words, we know what our objects are and what we may expect from them, not at all by considering their relation to consciousness, but to one another. The relation to consciousness is the same with each one of them, expressed by the preposition *in*, and is, therefore, not a distinguishing relation. Whatever we find out about the relation of objects is found out from them and from no other source. Their *esse* is not *percipi*. We may, if we will, identify their perceived existence with their *percipi*, but this identification would have no distinguishing significance. What they are as perceived existences, what relations still subsist between them, the laws of their occurrence, all such things are to be found out by considering them themselves, and in no other way. The fact, therefore, that knowledge of what objects are depends on the fact that they are in consciousness, in no way determines the nature of objects. We may say, consequently, that the peculiar form of connection or continuity which consciousness constitutes between objects does not affect their nature, but simply makes them known or knowable, and known with all their variety of distinctions from a thing to a thought.

That form of connection or continuum which we call consciousness is thus distinguished by the fact that it makes knowledge possible, and this knowledge, so far as its content is concerned, and that is so far as it is knowledge of anything, is determined not by consciousness, but by something else. The limits of knowledge would thus appear beyond our power to determine. Of course we can say, in a general way, that where we have no objects there we can have no knowledge, but that does not mean very much. We constantly find out new and surprising things about our objects, and to this sort of discovery it is impossible to set a limit. Just as con-

consciousness in no way determines what we discover, it determines in no way the limits of what we can discover. There is thus no such thing in the realm of knowledge as an impossibility which consciousness determines. Impossibilities, inconsistencies, contradictions, absurdities, just as much as concrete information, are determined not by the fact that we are conscious of objects, but by the fact that objects are what we know. It is meaningless, therefore, to state that matter can not think because that is unthinkable, unless we mean that we have actually discovered in the nature of matter something which we know must exclude thought. It is quite meaningless to urge that life could arise only from life, if our urging of this is supported by an appeal to mere thinkableness. Whether life can arise from anything else than life can never be determined by any 'must' or 'must not,' but only when we actually find out whether it can. In general, just because consciousness is the determining factor in the existence of knowledge, there is no reason to conclude that it is in any way a determining factor in the content or limitations of knowledge. The necessity we are under to know something never determines in any way the character of what we know. Knowledge may be a synthesis or a construction, but what it synthesizes or constructs, together with the principles and laws of the synthesis or construction is discovered to depend not on the fact of consciousness as such. Clearly this seems very much like saying that in knowledge we have revealed in a very real way that which is itself independent of consciousness and knowledge. Just because we find the content and limits of our knowledge never taking their coloring from the fact that we can or must know, we seem warranted in concluding that consciousness and knowledge do actually disclose to us that which is in no way dependent on consciousness or knowledge for its existence or character. Knowledge is, thus, palpably realistic.

The most crucial instance of this realism is doubtless the discovery which we make from a study of objects in consciousness, namely, that consciousness itself is a dependent existence, that it does not exist under certain conditions, but under these conditions disappears and becomes impossible. Of course it is not necessary to detail the steps in this discovery. It is sufficient to point out that it is made as all other discoveries are made. I learn that there has got to be a certain kind of organism in order to have consciousness, just as I learn that there must be eyes in order to see, or moisture in order to have things wet. There is nothing unique regarding this discovery about consciousness. We make it by observation, experiment and inference, just as we make other discoveries.

If consciousness begins to exist not only at some point in the

individual's life, but also at different points in his life, and is, thus, an interrupted existence, it appears to be quite impossible to regard it as a possession of the individual, something in him possibly, situated in his head perhaps, and affected by outer or other things. An individual may be affected, and, as a result, be conscious; but that this result should come about by operations upon his consciousness which, admittedly, does not yet exist, would seem to be a most untenable position. The notion that an individual becomes conscious because he already has a consciousness subject to operations upon it, appears to involve the existence of consciousness prior to these operations and independent of them, possibly independent of the individual himself. No satisfactory evidence for such an existence has been produced.

I find myself in hearty agreement with many recent discussions of consciousness, especially with that of Professor James, which aim to take consciousness out of the realm of terms and put it in the realm of relations. But there are some points of disagreement which I should like to note. These recent views aim to define consciousness as, in some way, a function within experience whereby experience itself becomes differentiated into the objective and the subjective, into the physical and the psychical, into the objects of the outer world and the events of a personal biography. That such a differentiation arises in the course of experience is, I suppose, beyond question. But I have been unable to discover that the differentiation throws light on the nature of consciousness. The differentiation simply divides the field of consciousness into two parts, but does not isolate a separate field in which alone consciousness is found. Physical objects just as much as personal histories may be objects in consciousness. Both are known; and to know the physical world does not convert it into autobiography. The element of experience which in one connection figures as a thing, appears to me never to figure in another as an idea; and no matter in what direction it figures, it is an element of which we are conscious so long as it remains an element of experience. The differentiation in question thus appears simply to reveal between our objects one of the distinctions of which we are conscious.² Furthermore, the term 'experience' which occurs so frequently in recent discussions, appears to me so shot through with the implications of consciousness, that it obscures the problem at issue. Objects, when in consciousness, may be regarded as elements of experience, but this experience, like consciousness, has discoverable conditions of

² In other words, it appears to me impossible to define consciousness by means of the distinction between 'the physical' and 'the psychical.'

existence and can hardly be regarded as the fabric out of which it is itself composed.

The conclusions I should like to draw from the preceding considerations are more negative than positive. That is, I should lay greater stress on what consciousness does not appear to be, than on my positively characterizing, as a continuum, that type of connection which it constitutes between objects. The facts at our command do not warrant us in concluding that consciousness is a kind of receptacle, situated where you will, into which things somehow get in the form of ideas or mental states. Things, or a part of them, may be in consciousness, but they are in it as things are in space. From such a parallel we are to find the clue to the interpretation of the preposition *in*. We have no right to conclude that consciousness constitutes a series of existences parallel to other existences, no right to conclude that the objects in consciousness are ideas of things outside, and no right to conclude that the objects in consciousness are *states* of consciousness. But we do, apparently, have abundant right to conclude that, when consciousness exists, a world hitherto unknown has become known. This does not mean that the world hitherto unknown has been transformed into ideas, but that this world has been illuminated, as it were, by consciousness, that it has been connected up in a new way. The fact that we should be able to discover the conditions of such a connection is very strong evidence for the position I have taken, for this fact discloses the very simple truth that the conditions under which a world becomes known are, themselves, conditions which form a part of the events of that world. For clarifying this general position and to emphasize the fact that consciousness is only a form of connection of objects, a relation between them, I find the conception of a continuum useful and suggestive. It is useful because it correlates consciousness with facts of a similar general nature. It is suggestive because a study of the nature of continuity may lead to an important understanding of the principles of connection which unite the things of the world.

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BIBLIOGRAPHICAL: TAURELLUS

IN 1606 Nicolaus Taurellus, sometimes styled 'the first philosopher of Germany,'¹ died of the plague at Altdorf. For more than thirty years he had preached a reformed philosophy with all

¹ 'Nicolaus Taurellus, der erste deutsche Philosoph. Aus der Quellen dargestellt von Dr. F. X. Schmid aus Schwarzenburg,' Neue Ausgabe, Erlangen, 1864, pp. x + 80.

the fervor with which his fellow Protestants were preaching their Reformed Theology, but he had found few to listen and apparently none to believe. His own attempts at philosophical construction had earned him but contempt and professional ostracism; they had not, even in that age of controversy, been honored with the public criticism to which in his youth he had looked forward.² A generation after his death he seems to have been either forgotten or deliberately ignored, and in the second third of the eighteenth century, when the followers of Leibnitz endeavored to revive the memory of the man whom their master had termed 'The Scaliger of Germany,' they found that his numerous works had become so rare as to be in some cases unobtainable.

Copies of two of these works have recently come into my hands, and one at least possesses no little interest for the curious.

Taurellus's first book, 'Philosophiæ Triumphus,' was printed in 1573, when the author was but twenty-six years of age. Its leading thought, that Truth is one, whether in philosophy or in theology, had occurred to him some seven years before. He was then a student at Tübingen, taking part in the seminar conducted by one of the most eminent Aristotelians of the day, Jacob Scheck.³ The copy in my possession is probably of an earlier issue than that described by Schmid, in that the date given by him, 'Anno 1573, Mense Septembri,' is not found on the title page. But its peculiar interest lies in the fact that it was Taurellus's gift to Scheck, a visible link, as it were, between the old order and the new. The inner side of the cover bears in a clear, bold hand the words:

Clarissimo medicinæ
 Doctori, nec non Philo-
 sophiæ professori celeberrimo
 D. Jacobo Schec-
 kio domino suo et
 præceptori colendissimo
 Basilea D. misit

Author

² 'Philosophia Triumphus,' Præf., p. 8. "Haec me sane moverunt ut Philosophiam suis repurgare conatus sim erroribus, quod si non ita feliciter successit, tamen aequi bonique consules, amice lector, occasionem forsitan offerrent aliqui plenius ut ipsa demonstretur. Ter sunt a me multo correctæ labore, nec adeo tamen arrident ut ipse mihi videar satis fecisse. Ni sperassem aliquot esse futuros qui se nobis sint opposituri, quorum materiam argumenta suppeditabunt, semel atque iterum eadem reddidissem longe perfectiora." (Here and elsewhere I have modernized spelling and punctuation and have written out contractions in full.)

³ 'Brucker,' ed. IIa, Vol. IV., p. 295, '(Schegkii) Germanorum Peripateticorum princeps sua ætate habitus est.'

The book contains also three brief notes, written in a most minute and much-abbreviated script, of a type common in the first half of the sixteenth century, probably the hand of Scheek (b. 1511, d. 1587). The first is on the margin of page 8 of the *Epistola Dedicatoria*, where Taurellus states his main thesis and relates the circumstances under which it was suggested to him:

(p. 7) "Cum Tubingæ ante septennium Philosophiæ studiis incumberem, disputationibus (ut moris est) exercebar quæ tum temporis isthic maxime profecto vigeabant. Iis ego si quisquam alius summopere delectabar; unum displicuit (quæ data fuit hæc meditando nobis occasio) quod, cum (et vere quidem) philosophica Theologicis adjungerentur, hæ voces hic inde volitarent: *Philosophice disputamus, non Theologice*; disserimus Astronomicæ, non Physicæ. Primum enim considerare coepi duplexne posset unius esse rei veritas," etc. The underline is in ink, and on the margin one reads, "Multa sunt in schola philosophicæ admittenda quæ in Theologia repulsari patimur."

In the Section, 'De Viribus Humanæ Mentis' Taurellus endeavors to reconcile the facts of heredity with theology's claim that the soul is given of God. The blood supplies the matter, the 'spirits' supply the form or life, the life is inseparable from the soul; hence "simul animam ex innata seminis utriusque vi assidueque spirituum vitalium infusione fieri judicamus. Hæc autem generatio animalis est, non naturalis, nec corpoream aut naturalem ideo animam esse consequitur quod a semine ipsam oriri statuamus, cum sanguinis atque spirituum substantia diversa sit, ut quæ ab utroque procedunt vere separari possint." Upon this the same hand notes: "Vult igitur doctissimus hic vir animam spissari e materia. Et siquis objiciat animam esse incorpoream, respondit eam non fieri naturaliter sed modo quodam inferiore quem nominare possis animale. Et non dicit quale sit, cuilibet mediocriter ingenioso cogitandum relinquens."

On the inner side of the cover at the end of the book, Scheek, if Scheek it be, has expressed in one brief sentence his position as against that of his sometime pupil: "Veritas una est, verum non unus scientiæ modus."

In his later years Taurellus was wont to amuse himself and his friends by embodying in Latin verse the prudential and moral reflections suggested by commonplace incidents. In 1595 he published a little volume containing one hundred and thirty-two 'Emblemata Physico-Ethica,' eighty-one of which were illustrated by rude woodcuts. As no printer would undertake the publication of the book, some of his friends paid a part of the cost, each selecting the poem that pleased his fancy and paying for the wood-cut that accompanied it. Most of these cuts bear the names and many the arms of the

friends that had severally subscribed for them. Of this first edition but few copies were printed. Another, containing one hundred and sixteen cuts, appeared in 1602, and yet another in 1617.

My copy is of the first edition and is also a presentation copy from Taurellus. On the reverse of the title six lines of MS. had been thoroughly blotted out. Careful erasure brought the greater part of the inscription to light:

(Nobilissimo et eru)dito v(ir)o D.
 Jacobo Pömero senatori Noric.
 prudentissimo ()
 doño suo et r(ectori)
 Clar(issimo)
 dd(edit A)u(thor).

To Jacobus Pömerus the thirtieth emblem is dedicated. 'Pömerus' is probably the Latinized form of Baumgärtner, a family that long took a leading part in the affairs of Nürnberg. Of this Jacob Poemer or Baumgärtner I have not been able to learn more than is given by Jöcher ('Gelehrten-Lexicon,' ed. 1747) in the brief biography of his son Albert Poemer (b. 1597). Jacob was 'Rathsherr' in Nürnberg and 'scholarcha' at Altdorf, *i. e.*, Rector of the Academy, afterwards the University, of Altdorf, in which Taurellus was Professor of Medicine from 1580 until his death.

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DISCUSSION

'PURE EXPERIENCE' AND THE EXTERNAL WORLD

THAT knowledge as a self-transcendent function, or as a reference to a reality beyond itself, can be reduced to terms of immediate experience is a conviction that has animated many a writer on philosophical topics. It is the source of Hume's protest against the complacent pretensions of rationalism, it is responsible for the 'permanent possibilities of sensation' advocated by John Stuart Mill, it motivates the opposition of neo-Kantianism against the claims of an experience-transcending function such as the transcendental ego, and it lies at the basis of phenomenalist doctrines such as those of Karl Pearson and Ernst Mach. In the 'radical empiricism' of Professor James appears the latest instance of this theory, in revised and corrected form. Nearly every shade of doctrine, from common-sense dualism to absolute idealism, involves this

objective reference and is thus rendered *ungeniessbar* to the thoroughgoing empiricist; and so it is proposed to construct the world out of 'pure experience,' thus virtually eliminating this objectionable feature of external reference.

In this paper it is not proposed to determine whether the concept of pure experience has any validity whatever, or, more specifically, whether on the basis of epistemology we are entitled to postulate pure experience; the purpose is the more limited one of advancing certain reasons why the attempt to reduce everything to this one category must be considered futile. These reasons reduce down to what the writer considers to be the main difficulty of the position, viz., its solipsistic tendency. I shall confine myself to the position as stated by James in recent numbers of this JOURNAL (I., Nos. 18, 20, 21).

What is pure experience? If this question, says James, means to inquire what sort of general 'stuff' constitutes experience, it rests upon a misapprehension. "It is made of *that*, of just what appears, of space, of intensity, of flatness, brownness, heaviness, or what not" (p. 487). "The instant field of the present is at all times what I call the 'pure' experience. It is only virtually or potentially either object or subject as yet. For the time being it is plain, unqualified actuality or existence, a simple *that*" (p. 485). Whether such a bit of pure experience shall be classified as a subjective state or as a physical object depends entirely upon the context in which it is taken. Thus the perception or image of a tree that has been blown down, if taken as coming in at the end of a series of volitions, emotions, recollections, fancies, etc., is classified as a subjective state; if taken as a member of the series in which wind, rain, thunder, etc.—all reducible to pure experience—form a part, a series which if continued would involve the gradual disintegration of the uprooted tree, then it is classified as a physical object. Subjective state and physical object, then, are but classificatory terms, symbolizing the fact that there exist series or lines of continuously joined experiences which intersect each other at various points.

The first difficulty which I wish to urge is that the theory makes no provision for the knowing of this second or 'objective' series. How can we become aware of its existence, without introducing an element essentially alien to pure experience? To recur to the former illustration, we may have seen the tree before the storm, we may see it as it lies prostrate, and we may visit it from time to time while the process of decay is going on. But however often we may cross the objective line, the intersections lie upon the subjective line as well, and that they simultaneously form part of a second line could not, it would seem, ever occur to us, because this second line is not

given completely. To argue that these fragmentary parts of the second line betray their peculiar affinities or relationships in the fact that they have laws or modes of behavior of their own, would betoken a misconception of the point at issue. We can not appeal to their orderliness or to their 'objective' characteristics of whatever sort; for the images or ideas in which such qualities are known are not primarily representations of other realities, but are themselves bits of pure experience, and so must be assigned to the 'subjective' order. If I leave my room when the fire is burning brightly in the grate, and return to find it burning low, the thought of a series of continuous perceptions uniting the two perceptions of the fire simply comes in at the end as an additional item of pure experience, and in no wise connects the two perceptions in question, separated as they are by an interval of time and by a stretch of more or less irrelevant intervening experiences. On the basis of this theory there seems to be no room for any other interpretation. 'Pure' experience and undefiled might reasonably be expected to keep itself unspotted from the vulgar assumption of an external world.

That this criticism would apply to the account given by an atomistic psychology would probably be pretty generally admitted, but in this case it would no doubt be maintained that the conception of experience as continuous and the recognition of 'feelings of relation' make all the difference in the world. With regard to the matter in hand, it appears to me that these addenda and corrections make no difference whatever. Unless the factor of objective reference is introduced *de novo*, the philosophy of pure experience must inevitably end in solipsism. That this implication is not realized is due to the fact that the theory plays fast and loose with the concept of objective reference. On the one hand it is insisted that experience never transcends that which is present to consciousness. The 'pointing' of thought to realities not present is reduced to a 'procession of mental associates and motor consequences'; it simply indicates that if both the present conscious content and the subsequent states were visible to an outside observer it would be seen that the present content will, as a matter of fact, lead continuously to a 'remoter state of mind, which either acts upon the reality or resembles it.' On the other hand, however, the feelings of relation are put to uses which virtually enable the individual to transcend the immediate present. The feelings of relation are represented as running out into the fringe, as leading us on, as 'pointing' in a given direction, much as a compass points to the north, yet never gets out of the box that encloses it. The thought thus never transcends itself, yet it feels the 'pull' of the enfringing setting, and it follows on, in this direction or that, as a blind man responds to the pull on the string by his

dog. In this ingenious representation the spatial metaphor of a relation reaching out, pointing towards, leading on, becomes, by the irrepressible suggestion which it conveys of a beyond, a workable substitute for, or rather a disguised form of, the objective reference which was rejected at the outset. The feelings of relation, which are given in the specious present only in connection with their terms, are by an unwarrantable process made to connect the specious present as a whole with other contents not present to consciousness. The living unity of experience, upon which James insists so effectively as against atomistic psychology, is broken up into abstract parts, and the feelings of relation, the existence of which depends upon the existence of their terms, are represented as detached from these terms. So long as a relation is given with its terms the whole is a matter of the immediately present, and there is no suggestion of a beyond. It is only when these feelings are brought in as apart from their terms that the quasi-reference is made to seem possible. This isolation of the feelings is accomplished by representing the unitary conscious state, which cognizes the relation and its terms in one indivisible act, as made up of three successive and hence isolable states, one of which is the feeling of relation. To illustrate, in the 'Principles of Psychology,' the chapter on the 'Stream of Thought' maintains that the experience of 'thunder-breaking-in-upon-silence' presents the two terms, thunder and silence, together with the relation of contrast, to one indivisible pulse of consciousness, or single segment of the mental stream. But in the chapter on 'Discrimination,' experiences of this sort, stated in generalized form, are said to present "first '*m*,' then '*difference*,' then '*n-different-from-m*.'" The several thoughts, however, to which these three several objects are revealed, are three ordinary 'segments' of the mental 'stream.'"¹ Previous experience no doubt does affect subsequent experience, but unless this modification takes the form of relations cognized, however dimly, as relations, we are shut in to solipsism beyond all hope of deliverance. That they can be so cognized, detached from their terms, may be deemed possible from the standpoint of atomism, but is not possible from the standpoint of a psychology like that of James.

In the second place, does James succeed in providing a numerically identical world for the various percipients? The temptation to make an advance on his 'exposed flank' in his discussion of the 'conterminousness of different minds' (p. 564) is too strong to be resisted. Unless each percipient is to dwell in a world apart, there must be points in his experience which are not simply precisely similar to, but numerically identical with, corresponding points in

¹ Compare, 'Principles of Psychology,' I., 240, and I., 498.

the experience of other percipients. We are told that "if one and the same experience can figure twice, once in a mental and once in a physical context, one does not see why it might not figure thrice, or four times, or any number of times, by running into as many different mental contexts, just as the same point, lying at their intersection, can be continued into many different lines" (p. 566). But in the 'Principles of Psychology' (Vol. I., pp. 229-237) it is shown that no state of consciousness can be exactly duplicated within the experience of an individual, and it would appear that essentially the same proof will apply in comparing the experience of different individuals. In order to make out numerical identity, as regards the experience of different individuals, it is necessary to establish precise similarity somewhere; whereupon 'pragmatic' principles will warrant us in proclaiming them so far forth one and the same. That the perceptions of physical objects by different individuals are necessarily different seems to be admitted by James, but he contends that in the perceptions of space there may be numerical identity. This seems a hard doctrine. Is it not true that the perceptions of space are, psychologically considered, every bit as different as are perceptions of objects? The space-relations which appear in visual perception are not apprehended from the point of view of some 'absolute' or arbitrarily chosen point, as in geometry, but depend always upon the position of the eye. So long as the several subjects are not in precisely the same position, all the corresponding relations in the spatial perceptions of two observers viewing the same expanse must differ from each other. Besides, the space we see is not merely empty space, but always involves a colored background, and hence it seems to follow that, if the perceptions of different observers of an object can not be precisely similar, the same must hold true of spatial perceptions. It may be true that the perceptions of different observers can have corresponding elements which are indiscernible, even though it be impossible that any two perceptions as wholes should be precisely similar. But if so, it must not be overlooked that these corresponding elements are obtained by abstraction. As elements in concrete wholes they can not be identical, unless the wholes are identical. With all deference I may venture to suggest that the error of Kant in the 'Transcendental Esthetic' is repeated here, viz., the substitution of geometrical for psychological space. It seems pertinent also to ask whether an identity which is confined to the most barren element in experience, and so does not apply to the qualitative content which essentially constitutes all that is of value in life, is much of a contribution to the task of uniting in thought the aggregate of individuals in one common world.

Lastly, there remains the question as to the kind of reality as-

cribed to those parts of the 'objective' series which are not experienced by any finite individual. Are they simply 'possible experiences,' in Kant's phrase, or are they actually realized in some connected experience? If the former is meant, all the objections brought against Kant's 'mögliche Erfahrung' and Mill's 'permanent possibilities of experience' would seem to be applicable; if the latter is intended, we have a partial inclusion within an experience of a higher order, the difficulties of which view seem fully as great as those which may be urged against the complete inclusion of absolute idealism. The essential feature of this difficulty has just been discussed. It asserts that 'a term taken in another relation must needs be an intrinsically different one,' as James himself phrases it. This assertion concerns the inmost nature of conscious existence and can not be brushed aside so easily as James seems to do. The extent to which the inclusion occurs—or, if this language seem objectionable, the extent to which there is numerical identity of elements—is quite immaterial, the real difficulty being the question how such an identity is possible at all. To conclude, the philosophy of pure experience does not account for our awareness of a world beyond our individual experience; and it also fails to show how there can be a world that is common to a multiplicity of individuals. It is much to be desired that the more detailed presentation of James's doctrines in his long-awaited work on metaphysics will soon be forthcoming.

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REVIEWS AND ABSTRACTS OF LITERATURE

Psychology: An introductory study of the structure and function of human consciousness. JAMES ROWLAND ANGELL. New York, Henry Holt & Co., 1904. Pp. 402.

Text-books in psychology may be divided roughly into three classes. The first consists of superficial systems of definition and classification which give the reader the false impression that he knows the subject. The books of the second class consist of original sketches on selected processes, or new theories, which leave the reader fascinated with the material, but without power of orientation in the subject as a whole. The books of the third class consist of systematic and well-balanced elementary statements of the facts, but so condensed that the reader must either have the guidance of a teacher or have access to treatises and original sources. The book before us is of this last class. That makes it preeminently a text-book to be used by a teacher in class work, and it is from this point of view that the present reviewer will consider it.

The author regards psychology as descriptive and explanatory. "The psychologist's explanations consist chiefly in showing how complex

psychical conditions are made up of simpler ones, how the various psychical groups which he has analyzed grow and develop, and finally how these various conscious processes are connected with physiological activities, and with objects or events in the social and physical world constituting the environment." Thus he adopts the biological point of view and regards consciousness, not as a metaphysical entity to be investigated apart from things, but as one of the manifestations of organic life, a part of the psychophysical organism. The most characteristic feature of the treatment is the thoroughgoing maintenance of the functional point of view.

The author is neither iconoclastic nor polemic, but proceeds in a plain and straightforward manner to outline the facts from the adopted point of view. He does not fall into the trap of making too positive statements in the interest of clearness, but shows a remarkably apt grace in making guarded statements on disputed points. Although the treatment is systematic, there is but little evidence of a 'system' of psychology. His natural-science method and point of view forbid this. The book reflects a characteristic individual attitude, but the mature reader loses sight of that and finds himself reviewing a connected series of tangible and verifiable facts.

This book might well be called experimental psychology, yet there is no conspicuous injection of directions for experiment and arrays of specific records. General conclusions are given in the spirit of the experimental psychologist. It might be called physiological, yet only two chapters are devoted to the review of physiological data. But the explanation never leaves the physiological factor out of account. It does not profess to be 'educational' psychology, yet the mode of treatment and the choice of illustrations make the text replete with suggestive hints in regard to the development of the mind. The factors of evolution and development are always in the foreground showing the history and mode of functional adaptation. It is not philosophical, being specifically limited, yet the choice of terms, the guarding of generalizations, the incidental laying bare of psychological grounds for philosophical inference, and the prevailing tone make one feel that the book lays a good foundation for a genuine interest in philosophy and constitutes a good propædæutic for it. The same is true with reference to the logical, ethical and esthetical aspects.

The style is rather guarded than brilliant. Where there are abundant data, *e. g.*, on the senses, the digest style is rigid; but in other parts it is lighter, though always technical. The most original discussion is on the subject of reasoning, where, of course, the functional theory appears to the greatest advantage. The book is not divided into the three traditional divisions, yet the familiar names are used and a more logical development of the subject is obtained by a parallel treatment of the cognitive, affective and conative factors.

The book has the essentials of a good text-book. It reflects the genius of the teacher and the investigator. And for the general scientific reader

who occasionally wants to read the 'latest and best' in general psychology, this is now the book.

C. E. SEASHORE.

UNIVERSITY OF IOWA.

The Ethics of Naturalism. W. R. SORLEY. Second edition, revised. Edinburgh and London, William Blackwood and Sons, 1904. Pp. 338.

The chief changes and additions which have been made in this new edition of a familiar work are indicated by the author in his preface: "A more positive definition of Naturalism has been given in Chapter I.; a great part of Chapter IV. has been rewritten, chiefly on account of the fresh light thrown upon Shaftesbury's philosophy by the publication of his 'Philosophical Regimen' in 1900; Chapter V. [Nature as the Moral Standard] appears now for the first time; a section on the factors of moral development has been added to Chapter VI.; a few pages on the psychology of pleasure and pain in Chapter VIII. have been rewritten; short discussions of some recent contributions to evolutionist ethics have been added to Chapter IX.; and the concluding chapter has been rewritten and considerably shortened. Apart from these modifications, and from frequent minor changes in expression, the argument of the whole book remains unaltered both as a whole and in detail."

That argument has lost none of its value in the twenty years that have elapsed since its first presentation. It remains now, as then, one of the clearest and most connected criticisms of the varied tendency in ethics known as Naturalism, a term which describes all systems which imply that 'the completest account of the world as a whole is the description of it in physical terms.' It is true that this term as thus defined seems hardly applicable to the moral-sense writers or even to Mill, but the author has well traced the course of development by which the more typical contemporary systems have arisen from their more ambiguous forerunners. And it is a special advantage of the book that it does thus criticize the whole development from a single point of view. The defect of the work is that of its virtue—it perhaps does less than justice to the value of the evolutionary movement, judging it, as it does, exclusively from the aspect of principle. It is surely an overstatement to say 'that the theory of evolution—however great its achievements in the realm of natural science—is almost resultless in ethics.' Perhaps a more acceptable conclusion and one more expressive of the author's position is that "the further we go in examining any naturalistic theory, the clearer does it become that it can make no nearer approach to a solution of the ethical question than to point out what courses of action are likely to be the pleasantest, or what tendencies to action the strongest; and this it can only do within very narrow limits both of time and of accuracy. As to what things are good it can say nothing without a previous assumption identifying good with some such notion as pleasant or powerful. The doctrine of evolution itself, which has given new vogue to naturalism both in morality and in philosophy generally, only widens our view of the old landscape. By its aid we can not pass from 'is' to 'ought,' or from

efficient to final cause, any more than we can get beyond the realm of space by means of the microscope or the telescope."

NORMAN WILDE.

UNIVERSITY OF MINNESOTA.

En lisant Nietzsche. EMILE FAGUET. Paris: Société française d'imprimerie et de librairie, 1904. Pp. 362.

M. Faguet's book is not a very systematic exposition of Nietzsche's ideas, the materials being selected rather by personal liking than scientifically. Though the book contains only quotations and little critique, it may have value in propagating the knowledge of the German philosopher in France.

According to Faguet the genesis of the system of Nietzsche's philosophy begins with the discovery of the 'Greeks before Socrates.' He agrees on this point with Oehler, who made a special investigation of the relation of Nietzsche to the first Greek philosophers. These philosophers resemble the German very often not only in ideas, but also in style.

The greater part of the book contains what Faguet calls 'the critique of the obstacles'; by which he denotes religion, science, rationalism and, above all, morality. The second part contains the positive side of Nietzsche's philosophy and an exposition of his ethics. Some points are treated very fully, for instance the rehabilitation of egoism and the necessary duality of morals; of others he gives only a hasty description, as in the case of the problem of values, which is not worked out sufficiently. The author thinks that the numerous contradictions in Nietzsche's philosophy might be resolved in the way indicated by Fouillée.

The last pages give a brief estimation of Nietzsche. Faguet does not consider him an original philosopher, nor would he adhere to him. He restricts Nietzsche's influence to offering some half-true ideas which, slightly modified, might serve as suggestions for the solution of current ethical problems.

M. L. CAMUS.

CAMBRIDGE, MASS.

Immediate Memory in School-Children. W. H. WINCH. *British Journal of Psychology*, June, 1904, Vol. I., pp. 127-134.

Über einige Grundfragen der Psychologie der Übungsphänomene im Bereiche des Gedächtnisses, zugleich ein Beitrag zur Psychologie der formalen Geistesbildung. ERNEST EBERT and E. MEUMANN. *Archiv für die gesamte Psychologie*, November. 1904, Bd. 4, pp. 1-232.

Each of these articles seeks to overthrow the doctrine that pure retentiveness of memory is incapable of improvement by practice. The English author definitely takes his start from the well-known negative dictum of James (*Psychology*, I., 663); while the Germans, although using the same method as James, are apparently ignorant of his experiments and of the later work of various writers on related questions.

In Winch's experiments, school-children were made to memorize lists of 12 consonants, which were exposed to their view for 25 seconds, and

which they were to reproduce immediately afterward. Ten such lists were learned on one day, ten more a week later, and ten more three weeks after the first. Improvement from week to week was shown by most of the children, and this result the author believes to indicate an increase in the pure retentiveness of memory. But it is clear that other factors mentioned by James, such as better methods of learning, and better adaptation to the conditions of the test, might have produced the improvement observed. The influence of these factors is not simply a possibility; it becomes a certainty in view of many published experimental results. To prove his point, the author must show a residuum of improvement after the elimination of all such factors; as he fails to do this, it can not be said that his result perceptibly weakens the conclusion of James.

More serious is the attack on the doctrine contained in the elaborate paper of Ekert and Meumann. They trained memory of one sort, and tested various other sorts before and after this training. The training consisted in memorizing nonsense syllables, while the tests included the learning of letters, numbers, words, vocabularies, prose, poetry and visual signs. Both the immediate retention and the retention for twenty-four hours were tested. These tests were applied before the training with nonsense syllables, in the middle and at the end of that training, and again some months after that training had ceased. The result was an improvement ranging from moderate to very great, in all those sorts of memory. The gain persisted and on the whole was even increased, during the months succeeding the training.

One great merit of this paper is that it points out, though it does not evaluate, some of the factors contributing to the improvement. Different methods of learning were compared, and some found much more efficient than others. For instance, such a little thing as rhythmically grouping nonsense syllables was a great help in learning them, and this device was actually adopted by the subjects in the course of their training. Other causes of improvement were increasing directness of method (avoidance of mnemonic associations, which were found to hinder rather than help), increasing interest and better emotional tone, closer attention—in a word, better adaptation to the peculiar conditions of memory experiments. Now in so far as the conditions of the tests in other sorts of memory were the same as in learning nonsense syllables, adaptation to the latter would bring about greater skill in the others too. In fact, the improvement in other sorts of memory was roughly proportional to their similarity to the process of learning nonsense syllables: most gain was made in learning letters and numbers, and comparatively little in learning prose and poetry. From this the authors conclude that the improvement is not due to the training of one universal function of memory; the one-sided training of one special memory function brings about, in their view, a concomitant training (*Mitübung*) of other special memory functions in amounts proportional to their similarity to the function trained. But they are not willing to admit, what seems quite possible on the basis of their results, that the '*Mitübung*' consists en-

tirely in the acquisition of better methods of learning, and in habituation to the conditions of the tests.

Still another reservation must be made. One methodological difficulty in all studies of the 'transfer' of training is to make the preliminary and final tests thorough enough to give a real measure of the subject's ability, without making them so extensive as to afford special training within the tests themselves. The authors have not escaped this difficulty, since the records of their tests show improvement within the tests themselves. The passages assigned for the test in learning prose were from a translation of Locke, in an archaic style, and were so long as to occupy an hour in the learning. This amount of practice is enough to develop considerable skill in handling this particular sort of matter; and the remarks of the subjects show that they did develop specialized methods adapted to this test. The authors admit the reality of this factor in the gross result, but presume it to be of minor importance.

How much 'general' or 'transferred' training of memory is left after deducting the effects of better methods of learning, better adaptation to the conditions of the tests, and special practice within the tests themselves? The authors have no means of telling how much, nor even if there is any. The doctrine of the untrainability of pure memory remains as little disproven by the work of Ebert and Meumann as by that of Winch.

R. S. WOODWORTH.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. January, 1905, Vol. XIV., No. 1. *The Relation of Esthetics to Psychology and Philosophy* (pp. 1-20): HENRY RUTGERS MARSHALL. - Psychologically, Beauty is to be regarded as the real, or permanent in Pleasure. Philosophically, the Beautiful may be regarded as the Real in the realm of Impression, the Good as the Real in the realm of Expression, while the True is the Real in realms exclusive of Impression and Expression. *Wundtian Feeling Analysis and the Genetic Significance of Feeling* (pp. 21-29): MARGARET FLOY WASHBURN. - The chief source of perplexity in the problem of feeling lies in the failure to recognize intermediate stages between feeling and sensation, which may be regarded as complexes of organic sensation. To this class belong the Wundtian dimensions of strain-relaxation and excitement-depression. The subjective is that which resists analysis, and in this sense only pleasantness and unpleasantness are subjective. *A Neglected Point in Hume's Philosophy* (pp. 30-39): W. P. MONTAGUE. - Hume was so imbued with the Cartesian and Lockean conception of objects of knowledge as states of the knowing subject, that he failed to perceive that such an idealism was rendered meaningless by his own theory of the composite nature of the self. He continued to regard ob-

jects as subjective states, although denying the existence of a subject. *Natural Selection and Self-Conscious Development* (pp. 40-56): H. W. WRIGHT. - When we reach, in the course of evolution, the plane of self-consciousness, the struggle for existence between individuals is transformed into a struggle for realization between ideals. Natural selection now operates to preserve and fulfill ideals of truth and righteousness, and becomes relatively indifferent to the maintenance of life and health. Reviews of Books: A. E. Taylor, *Elements of Metaphysics*: J. E. CREIGHTON. A. Döring, *Geschichte der Griechischen Philosophie*: W. A. HEIDEL. F. Raub, *L'expérience morale*, and L. Lèvy-Bruhl, *La morale et la science des mœurs*: HENRY BARKER. - Summaries of Articles. Notices of New Books. Notes.

REVUE METAPHYSIQUE ET DE MORALE. November, 1904. Numéro exceptionnel. *Le Paralogisme psycho-physiologique* (pp. 895-908): H. BERGSON. - Parallelism is a quite metaphysical doctrine and involves a subtle shifting from the idealistic to the realistic metaphysics and *vice versa*. The brain, as the peculiar organ which determines conscious states, is treated in isolation from the external world. This is an idealistic construction. But it can not, on the other hand, be regarded as one conscious complex among others, as idealism would hold, unless it be treated as a thing determining this conscious complex, which again is realistic. *Sur la Notion de Correspondance dans l'Analyse mathématique* (pp. 909-920): P. BOUTROUX. - Correspondence is a very general notion, not confined to quantity. It is indefinable, derived from immediate intuition. The definition of cardinal number as the common property of classes which have unique and reciprocal correspondence member for member, is circular; since classes correspond only because they have the same number of members. Correspondence means sameness of structure and is exactly the same notion as *law*. This definition of correspondence as observed sameness of structure is in the spirit of that school of mathematicians who prefer real advance in our knowledge of the world to the mere exercise of elegant fancy and the construction of all sorts of ingenious possible systems. *Sur la Structure logique du Rêve* (pp. 921-934): H. DELA CROIX. - Dream-perceptions are illusory because in sleep the customary reactions and readjustments are suspended. Their structure is explained by a central underlying *motif* or theme, not clearly present to the dreamer's consciousness, about which the dream-perceptions cluster and in the light of which they are interpreted. *Définition physique de la Force* (pp. 935-948): LE COL. HARTMANN. - Force is not to be defined metaphysically as an occult cause nor yet abstractly as *m a*, but as the perceived cause of a body's motion, *m v*. To distinguish this definition from the usual one, *m a*, it is called action. Mechanical force, *m a*, is then the rate at which the action *m v* changes its speed in a given direction. The fundamental notion of mechanics thus becomes directly intuitable, not a pure concept such as *m a*. Moreover, what is really conserved is not $m v^2$ but *m v*. Action may thus replace energy. *Fichte contre Schelling* (pp. 949-976): X. LÉON. - After 1801, Fichte was mainly

concerned to deny plagiarism from Schelling and to show the sufficiency of his own earlier subjective period. The accusation by Schelling of formality and abstractness was Fichte's own best defense. The absolute *Ego* is not a matter of direct experience but a formal presupposition known only by its activities. *Sur la Position du Problème du Libre arbitre* (pp. 977-1006): F. RAUH. The problem of free will should be solved in a 'positive' manner. We can not assume or deny absolute determinism *a priori*. We must study the problem in experience, independent of metaphysical doctrines. Experience and practice show the validity of the feeling of both power and will. *II^{me} Congrès de Philosophie-Genève. Comptes Rendus critiques: Philosophie générale* (pp. 1007-1037): E. CHARTIER. Résumé of papers and discussions. *Logique et Philosophie des Sciences* (pp. 1037-1080): L. COUTURAT ET F. RAUH. *Psychologie* (pp. 1080-1087): F. RAUH. *Morale et Sociologie* (pp. 1088-1113): A. BERTHOD ET E. HALÉVY. *Histoire de Philosophie* (pp. 1113-1116): A. DARLU. Table des Auteurs. Table des Articles. Table des Supplément. Supplément: Livres Nouveaux. Revues et Périodiques. *La Philosophie dans les Universités. Souscription au Monument de Ch. Renouvier*.

Cartellieri, A. *Ueber Wesen und Gliederung der Geschichtswissenschaft*. Leipzig: Dyk. 1905. 8vo. Pp. 32.

De Vries, Hugo. *Species and Varieties, their Origin by Mutation*. Lectures delivered at the University of California. Edited by Daniel Trembly MacDougal. Chicago: The Open Court Publishing Company. 1905. 8vo. Pp. xviii + 847.

Moore, Deranus A. *Laboratory Directions for Beginners in Bacteriology*. New York: Ginn and Co. 1905. 12mo. Pp. xxiii + 151. \$1.00.

Reinke, J. *Philosophie der Botaink*. Leipzig: Barth. 1905. 8vo. 4 m.

Righi, A. *Modern Theory of Physical Phenomena*. London: Macmillan. 1905. 12mo. 5 s. net.

Rudert, T. *Skizze eines Moralsystems als praktische Grundlage der künftigen Weltreligion*. Leipzig: Knaur. 1905. 8vo. Pp. 41.

NOTES AND NEWS

THE Henry E. Johnston scholarship at the Johns Hopkins University has been awarded to I. Woodbridge Riley, A.B., Ph.D. (Yale). Dr. Riley will devote his time to research in the history of philosophical movements in America.

UNDER the arrangement recently made between Harvard and Berlin universities to exchange professors, Professor Francis G. Peabody has been selected from Harvard, and Professor Friedrich Paulsen from Berlin.

PROFESSOR WILLIAM JAMES, of Harvard University, has been appointed acting professor of philosophy at Leland Stanford University for 1905-06. He will, however, remain at Harvard for the first half of the year, going to Leland Stanford in January to organize the department there. He will return to Harvard for 1906-07.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

ANIMAL PSYCHOLOGY AND CRITERIA OF THE PSYCHIC¹

IN the brief discussion of criteria of consciousness which follows it has been my purpose to distinguish between the philosophical and the naturalistic attitudes toward such criteria, to arrange systematically those criteria which are already in use, and to call attention to certain aspects of the values of various signs or tests of mental life. I have nothing new in either material or method to contribute to the subject, but I do wish to emphasize the importance in comparative psychology of the use of all available signs or criteria of mind rather than the selection of any one as the sufficient and final proof of consciousness. Whatever justification this discussion may need will have to be found, therefore, in the fact that it brings together a number of well-known facts which seldom are considered collectively in their relations to the study of psychic processes.

Quite apart from philosophical arguments concerning the nature of consciousness, and the epistemological or logical implications of the concept, the natural scientist is able to search out and make use of certain signs of mental life which he recognizes as criteria of consciousness. The logician in his attitude toward these criteria is chiefly concerned with their relations to the large number of concepts which constitute for him a self-consistent system; he is interested in what is necessarily true on the basis of certain assumptions. The naturalist is concerned with the practical validity of his inferences; he deals with a narrower range of relationships than the logician. The logician studies the necessary forms of criteria; the naturalist notes whether certain signs, which he has discovered by observation, serve as satisfactory guides for action. One asks 'must it be true'? the other asks, 'does it work'? Let me illustrate my meaning by reference to the positions taken by two well-known thinkers. Münsterberg,² with his avowed purpose to satisfy the demands of a logical system, holds that 'acknowledgment' is our only criterion of consciousness in the brutes. By this he means that only those

¹ Criteria is used here in the sense of signs or tests, rather than proofs.

² 'Grundzüge der Psychologie,' Bd. I., S. 98-99.

animals are conscious which we treat as conscious beings. Loeb,³ from an entirely different position, which I should call the naturalistic in contrast with the philosophical position of Münsterberg, asserts that evidence of ability to profit by experience is the criterion of associative memory, which in turn is the criterion of consciousness.

The logician and the naturalist do not necessarily disagree in their definition of consciousness; for both it may be the subjective, individual fact, which can be known directly only by the individual whose experience it helps to constitute, and who, in turn, is constituted an individual by the totality of states which are spoken of severally as states of consciousness. For the natural scientist this subjective fact is material of science because it can be studied in its relations to the facts of anatomy, physiology, anthropology. Human purposes well may be material of science, albeit we know only our own directly; and in precisely similar fashion the mental life of an insect, a fish or a monkey may be studied indirectly. In all these cases we have to depend upon inferences. We carefully note the order of physical (more exactly physiological) and psychic events in the individual, and then, on the basis of similarity of the physical order in another individual, we infer similar psychic processes. Certainty of the truth of these inferences there is none, nor can there be; but neither is there certainty of the truth of any of our inferences concerning the states of consciousness of our fellow beings. I infer that you are conscious; can I ever be more than practically certain of it? Here, if anywhere, we see the striking difference between logical and practical certainty. The former is that which satisfies the rational mechanism; the latter is that which suffices for the guidance of action. A moment's consideration, and we are convinced that inference plays a far more important rôle in human life than is usually suspected. In all things we make use of signs. Inference is the framework of science. Take from the natural scientist all that he does not know directly, all that he accepts with no more than practical certainty, and he is left with a colorless consciousness which can not even be described as self-consciousness. The criteria or signs upon which our scientific inferences rest are selected according to their serviceableness; they survive, as the pragmatist would say, because inferences based upon them are satisfactory determinants of action.

Wherever inference is necessary in thought it is desirable to study its basis; nowhere is this more important than in connection with consciousness. It is therefore worth our while to examine carefully the group of signs which have been selected by psychologists and physiologists as criteria of consciousness in order to learn

³ 'Comparative Physiology of the Brain and Comparative Psychology,' p. 218.

whatever we may concerning their values. It should be noted at once that all of the criteria proposed apply as well to human consciousness as to that of the brute, for too often we think that whereas we know human consciousness fairly well that of lower animals is quite beyond the limits of our knowledge. Now, as a matter of fact we know both by inference; hence, the only difference in our knowledge of the two is due to the somewhat greater perfection of our ability to apply our criteria in case of man. That you are a human being is no more proof that your consciousness is the same as that of your companion than is the fact that you have eyes similar to his proof that you see colors as he does. Consciousness must always be indirectly known, except in introspection; consequently our knowledge of the mental life of animals must vary, for all practical purposes, with our knowledge of their anatomy, physiology, habits, instincts and reactions.

Roughly, the signs of the psychic, which seem to me worthy of constant use, may be classified as the structural and the functional. From structure we infer the possibility of certain modes of behavior; and behavior is accepted as evidence of certain structural conditions. Both serve as signs of consciousness. In all cases in which mental life is in question, man serves as the basis of comparison.

I present the following six criteria in what seems to me in general the order of increasing importance. The functional signs are of greater value as a rule than the structural; and within each of the categories the particular sign is usually of more value than the general. In certain cases, however, it might be maintained that neural specialization is of greater importance than modifiability.⁴

I. *Structural Criteria.*

1. General form of organism. (Organization.)
2. Nervous system. (Neural-organization.)
3. Specialization in the nervous system. (Neural-specialization.)

II. *Functional Criteria.*

1. General form of reaction. (Discrimination.)
2. Modifiability of reaction. (Docility).⁴
3. Variableness of reaction. (Initiative.)

In parentheses I have suggested single words for the designation of these criteria. The terms 'discrimination,' 'docility' and 'initiative' have been taken from Royce's⁵ excellent discussion of the

⁴Modifiability, as here used, includes the several types of learning which are usually distinguished as unconscious (?) adaptation, associative learning, imitative learning and rational learning.

⁵'Outlines of Psychology,' pp. 20-57.

physical signs of mind in his text-book of psychology. Inasmuch as we speak of these criteria as physical signs of mind, it has seemed to me preferable to use language which was free from implication of the psychic; for this reason I use modifiability and variableness rather than docility and initiative.

Suppose, now, for the purpose of defining our criteria in more practical detail, we attempt to apply them to some organism of simple development—say, the sea anemone. (1) The general *organization* of the animal is so strikingly different from our own and from that of any other organism which we acknowledge as intelligently or rationally conscious that we are unable to give positive value to this test. It is true, however, that although similarity of form is presumptive evidence of similarity of function and of psychic processes, structural difference does not necessarily involve psychic difference. (2) No more satisfactory basis of inference is furnished by the *neural organization* of the sea anemone, for the nervous system is not sufficiently similar in form to those of undoubtedly conscious animals to warrant inference. (3) And finally, on the structural side, of *neural specialization* there is far too little to justify inference of more than mere sentiency. It must then be admitted that the structural criteria do not furnish a basis for the inference of anything except the lowest grade of consciousness.

Passing now to the functional criteria: (1) We find, as the neural specialization would lead us to expect, a number of differentiated reactions. *Sensory discrimination* appears as an important feature of the life of the organism. In fact there is evidence of both of Royce's discriminative signs: 'feeling' (liking and disliking), and different types of sensory disturbance, for the animal reacts differently to difference in quality of stimulation, as well as to difference in intensity. There is in this a slight sign of adaptation which may or may not prove to be in some degree intelligent. (2) But thus far there have been no careful studies of the *modifiability* of the reactions of the sea anemone. As a matter of fact, the observations of the animal under natural conditions have furnished no evidence of any form of ability to profit by experience; yet it would be foolish to conclude that the animal can not learn, for a systematic study of the subject in all probability will demonstrate the existence of modifiability of the associative type. (3) With *variableness* the case is similar, for too little work has been done to enable one to say much with assurance. So far as observed, the animal's reactions are uniform, there is no indication of sudden, apparently spontaneous, adaptation to the demands of situations. In other words, there is no sign of mental initiative.

As a result of this application of our criteria we should have to

say that the sea anemone probably possesses consciousness of the sensory-discriminative grade, but that there are no signs of either intelligent or rational consciousness.

This distinction which I have thus made of three grades or levels of consciousness—the discriminative, the intelligent and the rational—leads us directly to the consideration of the relative values of the three functional criteria, for it will be noticed at once that each of the three criteria corresponds to one of the grades of consciousness.⁶

By a number of investigators ability to profit by experience has been used as the all-sufficient criterion of mental processes. That the use of this criterion alone is undesirable, or even absurd, needs no further proof than that some form of modifiability or ability to learn is a characteristic of protoplasm. The more highly organized, the less stable the organic substance, the more readily it is modified by environing conditions it would seem. Hence, unless one is ready to start with the assumption that consciousness itself is a property or accompaniment of protoplasm (in which event there is no need of criteria of the sort we are discussing) this criterion is valueless when used alone. The fact that the crayfish needs a hundred or more experiences for the learning of a type of reaction that the frog would learn with twenty experiences, the dog with five, say, and the human subject with perhaps a single experience, is indicative of the fundamental difficulty in the use of this sign. Animals differ in rapidity of learning, but it has not been shown that any organism exists whose reactions can not be modified in adjustment to environmental conditions. We find marked differences in permanency of modifications among organisms, as well as in rapidity of adjustment. Moreover, several kinds of modifiability may be distinguished. But this involves us in a difficulty, for although one might naturally expect that animals differ merely in degree of docility, many students of the subject see fit to maintain that there are differences in kind as well as in degree.

Loeb, for example, accepts associative memory as the criterion of consciousness, and then adds, quite safely, "The criteria for the existence of associative memory must form the basis of a future comparative psychology. It will require more observations than we have made at present to give absolutely unequivocal criteria." So far we can agree and in part sympathize with him, but he goes on to commit himself to what we may call the assumption of a critical point—"For the present we can say that if an animal can learn, that

⁶ The three grades of consciousness here mentioned correspond very closely, I believe, to Morgan's sentiency, effective consciousness, and self-consciousness. See Morgan's 'Animal Behavior,' pp. 42 ff.

is, if it can be trained to react in a desired way upon certain stimuli (signs), it must possess associative memory.” To say that animals exist which can not be trained to react in a desired way upon certain stimuli implies that modifiability is not a characteristic of protoplasm. If protoplasm is not always modifiable, which I do not grant, there must be a critical point in organic development at which Loeb’s ‘ability to learn’ becomes possible. Now it is this assumption that some animals can not learn that appears unwarrantable. In the first place experience teaches us that animals do learn, and we therefore treat them as if they could until we are convinced that they can not (this is the purely practical aspect of the situation). No organism, I believe, has thus far been proved incapable of profiting by experience. The burden of proof rests with those who assume that only certain animals can learn, for it would be far more reasonable to ask for a demonstration of the inability of some one organism to profit by experience than to demand that the docility of all animals be proved. But of far greater importance for the support of our contention are the positive facts. Omitting mention of the well-known facts of modifiability in more complex organisms, we may refer at once to the evidences of modifiability in unicellular organisms.

Jennings, in a series of investigations remarkable alike for their admirable scientific character, their value and interest, has shown that the behavior of certain of the unicellular organisms is complex and modifiable. *Stentor*, for example, exhibits several forms of reaction, and also adaptation to conditions.⁸ Further evidences of what Jennings himself considers incipient intelligence in lower organisms are presented in his recent volume of studies.⁹ In this volume he writes, “Memory has as its basis the general phenomenon that a stimulus received or a reaction performed leaves a trace on the organism, or modifies its conditions in such a way that it later reacts differently to the same stimulus. This basis of memory is, of course, clearly present in *Stentor*” (p. 126). And again, “This [referring to a series of reactions in *Stentor*] is clearly the method of trial and error passing into the method of intelligence, but the intelligence lasts for only very short periods. To really modify the life of the organisms in any permanent way, as happens in higher animals, the method of reacting discovered to be successful by the method of trial and error should persist for a long time. Apparently this is not the case for unicellular organisms, but further work is needed on this point” (p. 251).

⁷ ‘Comparative Physiology of the Brain and Comparative Psychology,’ p. 218.

⁸ Jennings, ‘American Journal of Physiology,’ 1902, VIII., pp. 42 ff.

⁹ Jennings, ‘Contributions to the Study of the Behavior of Lower Organisms,’ published by the Carnegie Institution of Washington, pp. 112, 126, 251.

It is furthest from my purpose to argue in opposition to Loeb that there are no crises in organic development; on the contrary, I should admit that it is practically certain that sudden changes do occur, that Nature does make leaps, that gradual development in one direction suddenly makes possible some apparently new process of change. But mere ability to learn, as defined by Loeb, what is called modifiability in this paper, is not, so far as I can determine, something which appears suddenly as a mark of a critical point in organic development. I wish to maintain that Loeb makes a mistake in his choice of a criterion, that he should lay stress upon the manner of learning instead of upon the mere fact of learning. Associative memory is a particular kind of modifiability; hence, although it implies modifiability, modifiability of reaction does not necessarily imply associative learning. If this be true we should study the way in which animals learn, determine the various modes of profiting by experience, classify them, and thus ascertain not merely which animals learn or even which learn associatively, but also precisely how they learn.

On the basis of the studies of animal behavior which are now on record we may safely say that mere ability to learn is common to all animals, and that it is indicative of a low grade of consciousness; ability to learn associatively, on the other hand, is restricted to certain animal phyla and is a sign of a higher grade of consciousness. This is in disagreement with Loeb, for he holds, first, that associative memory is *the* criterion of consciousness, and, second, that ability to learn is *the* criterion of associative memory. In contrast with this I wish to defend the view that ability to learn is *a* criterion of consciousness, and that the different kinds of learning (associative, imitative, rational) which we distinguish are criteria of different grades of consciousness. There is no one criterion of the psychic which can be accepted as a sign of all forms and conditions of consciousness. Each grade of mental development has its own appropriate signs or criteria: discrimination indicates a less complex form of psychic processes than associative learning, and this in turn is a sign of a lower grade than that which is indicated by inventiveness or initiative or variableness of reaction. If a single criterion is imperatively demanded we might agree to accept rapidity of learning as a measure of the complexity of the psychic.

With these few thoughts concerning the theoretical aspects of the problem of criteria clearly in mind, let us examine for a moment the practical application of ability to learn as a criterion. Bethe, as well as Loeb, selected this as the one available and sufficient criterion, and, fortunately for our purposes, he has through his experimental

work furnished us with results of its application that may now be taken as indications of its serviceableness.

After a study of the crab, in the course of which it was shown that five or even more experiences(!) did not enable the animal to learn to avoid a dangerous object, Bethe concluded that the animal does not possess psychic processes.¹⁰ In similar fashion he made experiments with ants and bees which convinced him that these animals are merely reflex machines, incapable of profiting by experience, and therefore lacking psychic processes.¹¹

Even if experiments since made by other investigators¹² had not proved the falsity of Bethe's conclusions, his attitude toward the subject would still be curiously contradictory from the naturalistic as well as from the logical standpoint, for the animal which did not learn with five experiences might give very definite signs of consciousness if it were given ten trials. Who is to fix the number of chances that the poor brute is to have to demonstrate its psychic processes?

These few instances of the working of the Bethe-Loeb criterion clearly indicate its fundamental weakness. It is absurd to say that it is of more value for us to discover that an animal does not perceptibly profit by a few experiences and from this conclude that it has no psychic life, than to discover by a thorough study of its behavior how its reactions are modified by often-repeated experiences, —in other words, in what manner and with what degree of rapidity it is able to profit by experience. Surely it is of vastly more importance for us to know how an animal learns than simply that it learns.

It is not enough to rest with pointing out the weaknesses of the criterion which has been most used. We must now ask ourselves what criteria and what method of application seem likely to yield the most valuable results for comparative psychology. To this question I should return the answer that is suggested by the classification of criteria that is presented at the beginning of this paper. In the study of the mental life of an animal no one of the six criteria, or however many there may be, should be used to the neglect of the others. In certain cases it may be best to apply each in turn, as was attempted in case of the sea anemone; in others it may be necessary to use only variableness, or modifiability and variableness. Each criterion has its own particular value, yet all are signs of psychic processes. It should be clearly understood that I do not in the least wish to suggest that these six criteria are the only ones pos-

¹⁰ Bethe, 'Arch. f. mikr. Anat.,' 1898, LI., S. 447.

¹¹ 'Arch. f. d. ges. Physiol.,' 1898, LXX., S. 85.

¹² Yerkes, 'Biological Bulletin,' 1902, III., p. 241. Yerkes and Huggins, 'Harvard Psychological Studies,' 1903, I., p. 565. Fielde, 'Proc. Acad. Nat. Science of Phila.,' 1901, p. 529.

sible; on the contrary, there are probably much better ones still unthought of, which it is our task to discover and apply.

Undue emphasis of the structural criteria is unsafe and unprofitable, for it is likely to lead us to deny consciousness to animals which, although strikingly different in most ways from us, exhibit such complex forms of behavior, such complex modes of discrimination, adaptation, and communication that we can scarcely conceive of them as unconscious. Who shall say that the ant or bee has not a highly complex mental life? Certainly those who know them most intimately incline to ascribe to them psychic processes. All we can safely say then is, that the careful, systematic application of all available criteria, with good judgment and reasonable emphasis, may be expected to yield us the best available basis of inference from the physical to the psychic.

The problems of comparative psychology now appear to center about the course of the development of reactions, and the relations of the various types of activity. The genetic formula for reactions is the kind of description that makes strong appeal to all natural scientists. Too many of them, it must be admitted, seem to think it the only form of description possible. The evolution of activity is the all-engrossing subject. Action systems are rapidly being worked out for various animals, and the forms, relations and modifications of reactions are being studied with a minuteness that promises soon to put us in a position to trace with profit the course of the development of activity in the race as well as in the individual.

Meanwhile our criteria of consciousness are increasing in number, and our ability to use them is becoming greater by reason of increased knowledge of the facts of animal behavior. Perhaps when we succeed in ridding ourselves of certain prejudices that physical science fosters we shall agree with those who know the ant and bee most intimately. For may we not reasonably believe on the basis of just such signs as we have been discussing, that the ant with its complex organization, however different from ours, its highly developed and complexly differentiated nervous system, its manifold forms of sensory discrimination, its docility, and its extremely varied social life, possesses a form of consciousness which is comparable in complexity of aspect and change with the human?

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INFERRED CONSCIOUS STATES AND THE EQUALITY AXIOM

CONSCIOUSNESS is one of the topics just now at the forefront of discussion. Many motives are contributing to this, and psychologists and philosophers seem to be participating about equally in the interest aroused. Any inquiry is timely, therefore, I suppose, which offers its mite to the larger current of general discussion.

If the question were proposed whether it is justifiable to assume the existence of certain states of consciousness in spite of the fact that they elude the sharpest scrutiny of introspective experts, and if the advocates for and against were asked to stand forth for comparison of numbers, I suspect that the upholders of the affirmative would be surprisingly in evidence. Common sense, to be sure, favors the view that what we find in consciousness is the correct measure of what is really there. But logic sometimes prevails over the dictates of common sense, as indeed it seems often to have done in the case of this belief in unperceivable states of consciousness.

It is not my purpose here to defend this doctrine. Nor is it my intention to attempt any wholesale demonstration of its invalidity. I shall attempt merely to suggest certain reflections upon what I may, for convenience, name the Stumpf-Stout argument—reflections which, to my mind, discredit this argument and thus remove one of the strongest props to a belief in the existence of conscious states which are not merely undiscovered, but also forever *undiscoverable*.

First, let me remind you of the argument referred to. It is to be found, in substantially the same form, in Stumpf's 'Tonpsychologie' and Stout's 'Manual.' It is noteworthy, too, that Professor Stratton has recently reaffirmed the same position.¹ No injustice is done to the argument, I think, if it be stated in the following way: Suppose an instrument, capable of giving a continuous sound-stimulus of increasing vibration-rate. And suppose that the instrument be for the moment so adjusted as to give three successive sensations, S_1 , S_2 and S_3 , these sensations to be so related that, while S_1 is indistinguishable from S_2 , and S_2 , in turn, indistinguishable from S_3 , S_1 and S_3 , the extremes of the trio, may be clearly distinguished from each other. So far we have only the statement of an experimentally observable fact. But now comes the argument: since S_1 , the first sensation, and S_3 , the third sensation, are perceived as different, it

¹ Stumpf, 'Tonpsychologie,' I., pp. 33-34 and 352.

Stout, 'Manual of Psychology,' II., 1, 3, and II., 7, 2.

Stratton, 'Experimental Psychology,' Chap. V.

must be true that S_2 , though apparently identical with both S_1 and S_3 , is in reality different from them. For otherwise we should be confronted by the anomalous spectacle of two things unequal to each other and yet both equal to a third. The observed difference between S_1 and S_3 would be impossible, argues Stout, were not the change in the physical conditions accompanied throughout its entire course by a change in the sensation, and that, too, even though the change in the sensation be imperceptible. For (to slightly adapt Stout's language to the illustration that we are employing), 'if the pitch-sensation S_1 is regarded as identical with the pitch-sensation S_2 , merely because the one note is indistinguishable from the other, and if in like manner S_2 is regarded as identical with S_3 , then S_1 must be identical with S_3 , and it would be impossible that any perceptible difference should ever arise.' Stout's argument is virtually a direct restatement of Stumpf's words.

The point of the argument is quite unmistakable. There is no obscurity about its meaning. While the physical sound-stimulus has been changing from the point corresponding to S_1 to the point corresponding to S_2 , the sensation has been changing in appropriately parallel fashion. But this latter change has been unperceived. Indeed, says Stumpf, even with the highest possible degree of attentive scrutiny, it may remain unperceivable. And yet, notwithstanding the lack of direct observational evidence to the contrary, the inference is forced upon us, we are told, that actual differences in the sensations do exist.

This set of considerations is meant, of course, to extend to all departments of sense, and to apply alike to changing qualities and changing intensities.

Now, it is evident that this entire Stumpf-Stout argument for unperceivable states of consciousness rests upon the axiom that two things equal to a third are equal to each other; or rather, perhaps, upon a transformed statement of this, viz., that two things found unequal to each other can not actually be both equal to a third. And it seems to be a fair question to raise, whether we have any warrant for applying to the processes of consciousness an axiom primarily intended for use in mathematical thinking. But, before attempting to discuss this point, several preliminary comments suggest themselves.

In the first place, there is at least one experience similar in general character to that above related, where we seem to find no cause for stumbling in the fact that the axiom of equality does not apply. Two distances upon the surface of the hand are made equal to a third distance upon a neighboring area. Nevertheless, the two distances when compared with each other do not seem equal. But what

ground have we for expecting any other result? The matter is not one for *a priori* treatment, but for observation. Because the two cutaneous extents, though perceptually equal to the standard, are not equal to each other, shall we argue that the supposed equality to the standard is illusory, the actual, rationally demonstrable relation being rather that of inequality? Such reasoning would certainly be parallel to that above set forth in respect to the changes in sensation. Again, if the Stumpf-Stout argument is to hold in the realm of sensation-differences, should it not hold with equal force in the region below the stimulus threshold? Stout, in fact, maintains that it probably does so hold. But what degree of stimulus-intensity produces the first actual, though imperceptible, sensation? Does a sensation spring into existence as soon as any stimulus whatever reaches the sense organ? How is one to know? And how many such sensation-qualities and sensation-intensities may there be before something becomes discernible in consciousness? When we engage in these familiar speculations, we seem once more to catch the roar of Leibniz's waves upon the shore and to hear the feeding of Fechner's caterpillars in the forest.

Still further, and this time within the special region covered by the argument. An obvious corollary of the Stumpf-Stout doctrine is that the sensation on the conscious side is just as continuous as the sense stimulus on the physical side. The S_2 of the original illustration is not the only imperceptibly different sensation lying between the distinguishable S_1 and S_3 . Consider the fact that the most practiced observers are unable to distinguish two sounds whose objective vibration-rates are respectively about 12,000 and 16,000. On the basis of the argument under consideration, these sensations must in reality be different. Yes, more than that. The note produced by 12,001 vibrations must be different from that given by 12,000, that produced by 12,002 vibrations different from that given by 12,001, and so on, making in all 4,000 unnoticed and unnoticeable sensations between these limits. But this is not all. Why suppose the changes in the physical stimulus to occur by steps of one vibration? Let the rate of change be by half-vibrations, quarter-vibrations, in fact by any fractional vibration-rate that the best conceivable instrument can produce. The number of sensations on the side of consciousness must keep pace with the fineness of difference that the stimulus is capable of exhibiting. The number of unperceivable sensations, therefore, that may find lodgment in our consciousness is practically limitless. Let the increase in any stimulus intensity be continuous and the sensation-changes are no less continuous. Only, our apprehension of these changes is so faulty that when we come to reflect upon the matter we seem to have a discrete series. Stout,

indeed, argues that, if the series were really thus discrete, 'the sensation ought to vary by leaps and bounds at certain fixed points'—leaps and bounds, I suppose, that would be apprehended as such. Now, of course, when we experience a series of intensities that proceed by steps of just observable difference, an outside observer who could watch the physical changes and the accompanying series of just observably different sensations would see the latter as discrete, as separated by gaps which on the physical side were filled. But to us who experience the series the perception of a just observable difference can hardly appear to be a leap over a gap.

But I suppose such hackneyed considerations as these have little weight in the face of the supposed logic of the situation. They may serve, however, in some fashion, to make clear the implications of the doctrine here in question. I must now try to show that the equality axiom is not to be employed in support of this doctrine except under qualifications which rob it of its power. Stated in formal fashion, the Stumpf-Stout argument reduces to this hypothetical syllogism:

If sensations S_1 and S_3 are each equal to S_2 , S_1 must equal S_3 .
(For two things equal to a third are equal to each other).

But, S_1 does not equal S_3 .

Therefore S_1 and S_3 are not equal to S_2 .

But does the equality axiom, valid as it is in the sphere of mathematics, hold likewise in the realm of consciousness?

Obviously we should not be too ready to transplant an axiom from the home of its birth to alien territory. We should at least examine its right to survive, with unimpaired strength, in its new surroundings. And we may at once be made suspicious of any uncritical transplantation when we reflect that the meaning of equality for the mental life is, in its first intent at least, *felt* equality, whereas in mathematics we mean by equality a relation which holds good in utter disregard of subjective apprehensions of it.

But, however this may be, if the axiom in question is to retain its validity anywhere outside of mathematics, care should be taken to state the *respect in which* the equality is to be regarded, and the *conditions under which* the equality is known to obtain. The first requirement presents no difficulty when psychical states are in question, for the circumstances under which any comparison of such states is made are usually clear enough to obviate any confusion. The second requirement is the one that gives trouble. And yet it must certainly be met whenever the relation of equality is in question. For there is no *a priori* guarantee that an equality holding under one set of conditions will continue to hold when these condi-

tions have been changed. The equality between an American dollar and a particular number of German marks is maintained only when the conditions of the market are maintained also. All this is, of course, plain enough. But may it not be just here that grounds are to be found for criticizing the importation into psychology, without discussion, of a mathematical axiom. Completely stated the equality axiom should run: *Two things equal to a third under certain conditions are equal to each other*, PROVIDED THAT THE SAME CONDITIONS STILL PREVAIL. In mathematics the same conditions so obviously do prevail that they may be disregarded there in the statement of the axiom. 2×2 and $12/3$ are both equal to 4, and invariably equal to each other, because the numerical conditions under which these relationships hold are unchangeable. But when sensations or other conscious states are to be compared, it can by no means be assumed that their underlying conditions remain unaltered.

Take the familiar illustration once more. Who can assert that the cerebral conditions under which S_1 and S_2 are given and compared are identical with those under which S_1 and S_3 are given and compared? But until we know this and know it quite positively, we are not justified in making application of the axiom. It may well be that the physical stimuli of S_1 and S_2 are so little different that the cerebral states produced by them are the same. That nerve tissue offers resistance which some intensities and intensity-differences are unable to overcome seems to be an assumption not without warrant. Or, the very fact that the cerebral processes corresponding to S_1 are still in a state of partial excitement when the physical stimulus for the production of S_2 is given, may bring it about that this latter stimulus is unable, through inhibition or other causes, to produce the full cerebral and conscious effect that it would produce if given entirely alone. S_1 and S_3 , on the contrary, may well be occasioned by physical stimuli sufficiently different to produce distinct cerebral commotions and, consequently, distinguishable conscious states. These are all trite observations. Of course our inability to make any exact statements about the conditions that prevail while sense stimulations are moving towards and reaching their cortical termini, places us often in embarrassment, and makes our suppositions too tentative for secure thinking. But, as the case stands here, are not the chances greater that we are in the presence of a brain fact rather than in the presence of a mystery of consciousness? And in our temporary uncertainty are we not doing better to place our hypotheses in a region where there is some hope of further enlightenment rather than in a region where the very circumstances of the case cut us off forever from the chances of investigation?

An illustration will serve best to sum up these considerations about the axiom. Let A , B and C be horizontal lines so drawn that A and C shall be the usual forms of the Müller-Lyer figure, with out-turned and in-turned arrows respectively, while B is a plain line. Let the adjustment of length be such that A and C are both perceived equal to B . But now strip A and C of their Müller-Lyer arrows and place them respectively between long and short parallel lines. A and C will no longer appear equal. That is, two lines perceived as equal to a third under certain conditions do not appear equal to each other under certain other conditions.

Now if this illustration fairly represents—and it seems to me that it does—the state of the case when qualities and intensities are to be compared, is there any possible reason for being overwhelmed with surprise at finding S_1 and S_3 equal to S_2 and yet not equal to each other? And, furthermore, is there any compulsory power that the equality axiom can wield over our thought in this instance, forcing us to conclude, as do Stumpf and Stout and the rest, that the reality is quite other than what our best endeavor can reveal? Rather, indeed, it seems to me, so confident ought we to be of the inapplicability of an unqualified statement of this axiom that we may feel assured that we are nearer the realities when we take our sensations to be what we find them to be, than we are when we take them to be what a dubious argument asserts that they *must* be.

A word in conclusion. It may be that unperceivable mental states exist. At any rate I do not wish here to deny them. But of two things I do feel fairly confident. First, it is my steadfast belief that if such states do exist they can be properly inferred only when some influence upon perceived conscious states is distinctly discernible. And, secondly, however the general fact may stand, I am entirely convinced that we are not under obligation to assume such states in order to avoid coming into contradiction with the equality axiom. And to set forth this last conclusion, together with the few reflections upon which it rests, is here my sole purpose.

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REVIEWS AND ABSTRACTS OF LITERATURE

Der Sociale Optimismus. LUDWIG STEIN. Jena, Hermann Costenoble, 1905, pp. 267.

This book, as we are informed in the preface, is a collection of essays which have appeared from time to time in the course of the last few years in periodicals and daily papers. There are twelve, as follows: (1) Social Optimism, (2) Social Ideas and Ideals, (3) Methods of Social

Restraint, (4) The Philosophy of the 'Middle Line' and the Parallelogram of Social Forces, (5) Menger's Popular Labor-State and Legal-Socialism, (6) Legal-Socialism and the Political Parties, (7) Social-Politics, (8) The Victory of Epistemological Pessimism, (9) Sociology on a Monistic Basis, (10) Mechanical and Organic Theories of the State, (11) Energetic Optimism, (12) The Fore-Shadowing of Optimism.

'Social Optimism' is the fourth of a series of recent publications by the author treating related topics. It emphasizes the social rather than the individual nature of optimism, and seeks to correlate material rather than to construct a system. Optimism has produced no such closed and firmly welded system as that of pessimism in the works of Schopenhauer and Hartmann. The purpose of the author is to present the problem of optimism in its various phases, and by a critical examination to distinctly differentiate similar and opposing views. Over four hundred different authors are quoted or referred to in the twelve essays.

The philosophical point of departure of 'Social Optimism' is the 'energetic' world-view of Mach and Ostwald. "The attempt is made not only to establish 'Energetic Monism,' theoretically, but also to answer its critics; announcing it as being of so transcendent a nature as to be subservient to no political party, nation, cult, or philosophy. Seen in the perspective of universal history, *sub specie æternitatis*, all of our political and religious oppositions, all importunate war cries and emphases of the important destiny of our day, shrivel to insignificance and nothingness. Starting with experience, with its eyes fixed upon social facts, having traced these to their psychological origins, 'Social Optimism' will illumine the way of humanity to social cosmos."

The essence of the optimistic creed is given in a quotation from the concluding words of Gustav Schmoller's recent work entitled 'An Outline of the Principles of Political Economy,' and reads: "The time will come when every good and normally developed man will know a suitable trade, and the attainment of individuality, self-esteem and the power of self-assertion will be coupled with righteousness and the highest public spirit. It is to be hoped that the journey is not so long as that which brought man from the condition of brute, physical strength to that of his present cultural state." As might be surmised from the number and diverse interests of the authors quoted, the essays are an invoice of the scientific, religious and philosophical concepts which have dominated the world-movements of the past. Running through the opposing and parallel opinions of the modern thinkers Dr. Stein finds the thread of monism; and between the idealism of Cohen and the materialism of Haeckel he finds room for what he regards as the more scientific concept of energetic monism. Fichte is the real founder of this new dynamism. 'Social Optimism' and 'Energetic Monism,' then, are resultant concepts of this inductive study, and not, as one might hope, the corner-stones of a newly completed structure. Their content, scientific, religious and philosophical, remains to be more clearly defined in terms of a new civilization which shall embody their inherent prophecy.

As a review of the trend of more recent thought the essays are both stimulating and instructive. The style is lucid and virile. While 'Pragmatism' and 'Instrumentalism' are nowhere mentioned by the author, they would, doubtless, both be included in the concept 'Energic Monism.'

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The Vivisection Problem. (A Reply.) ALBERT LEFFINGWELL, M.D.
International Journal of Ethics, January, 1905, pp. 221-231.

The matter of the controversy over vivisection is continually at the focus of public attention, and this alone would sufficiently account for a great deal of its puerile treatment. No other current question affords a more vivid illustration of the oscillations of thought. The almost exact balance maintained between approbation on the ground of utility and disapprobation on the ground of cruelty, producing much fluctuation of individual conviction, still keeps the public about evenly divided.

This article is written in reply to one entitled, 'Is Vivisection Justifiable?' by C. S. Myers, of Gonville and Caius College, Cambridge, published in the same journal, April, 1904.

Mr. Myers, who poses as an unprejudiced arbitrator having general acquaintance with the principles of ethics and psychology, registers an almost unqualified endorsement of the practice. He classifies the opponents of vivisection on moral grounds according to three standpoints, viz., the 'religious,' the 'common-sense' and the 'naturalistic.' The first considers that animals are placed in the world by the Divine Will and that man is their natural protector; it is an abuse of superior intelligence for man to inflict pain on them for any purpose whatever. The 'common-sense' antagonist, while opposing extreme cruelty, sanctions the infliction of a certain amount of pain upon animals, providing man's gain thereby is sufficiently great. The third standpoint, the 'naturalistic,' condemns vivisection not so much on account of the pain endured by the animals, as on account of the reflex effect which cruelty has upon man.

The arguments which Mr. Myers adduces in refutation of these respective positions are: that those who argue from the 'religious' standpoint are inconsistent when they sanction the slaughtering of cattle and the poisoning of vermin for the sake of increasing human comfort; that the 'common-sense' antagonist is ignorant of the great utility of vivisection; and that the 'naturalistic' view does not take into account the truth of 'multiple-personality' which means that, while a vivisector may be humane on all other points, sympathy would be positively detrimental to success at the operating-table.

This author cites the 'psychologist's fallacy' in refuting the charge of 'the sentimentalist' that vivisection involves the infliction of agony, saying that the cries and writhing of the animal-subjects are no criterion of true 'mental pain.' Besides, dogs have been observed to wag their tails and lick the hands of the operator, which evinces their indifference to the experiment.

He further considers it needless to discuss the utility of vivisection,

productive as it has been of such magnificent results in the study of microorganisms and the discovery of antitoxins. Typhoid and Mediterranean fever, diphtheria, tuberculosis in cattle and snake-bite have been successfully combated with remedies perfected through vivisectional experiments.

Dr. Leffingwell, himself a physician, is inclined to view the matter in another light. While laying no especial claim to knowledge of the principles of ethics and psychology, he doubts whether natural laws are to be discovered and human welfare promoted at the expense of animal agony. The question of *degree of pain* is one of some importance to him. He says, "The impeachment of unlimited vivisection rests wholly upon the conviction that in some of its phases it is productive of agony." The recognition of the value and moral legitimacy of definitely restricted vivisection should not blind one to the fact that, beyond certain limits, it becomes grossly immoral. "That vivisected animals sometimes suffer, is a charge that rests wholly upon the evidence of men who are neither 'sentimentalists' nor 'laymen,' but members of the medical profession. Speaking before the British Medical Association at its annual meeting in 1899, the President of one of the sections, Dr. George Wilson, LL.D., made this remarkable charge: 'I have not allied myself to the anti-vivisectionists, but I accuse my profession of misleading the public as to the cruelties and horrors which are perpetrated on animal life. . . . Whether so-called toxins are injected under the skin, into the peritoneum, into the cranium, under the dura-mater, into the pleural cavity, into the veins, eyes, or other organs—and all these methods are ruthlessly practiced—there is long-drawn-out agony. The animal so innocently operated on may have to live days, weeks or months, with no anesthetic to assuage its sufferings, and nothing but death to relieve.'"

Dr. Henry J. Bigelow, LL.D., for many years a professor in Harvard Medical School, says: "The ground for public supervision is that vivisection, immeasurably beyond any other pursuit, involves the infliction of torture to little or no purpose."

Dr. Leffingwell tends to believe, in spite of the psychologist's fallacy, that Mr. Myers's citation of dogs having been observed to wag their tails and lick the hands of the operator, betokens, not a happy animal indifference to fate, but rather a mute, instinctive and vain appeal for sympathy.

Concerning the utility of vivisection, Dr. Leffingwell is by no means so sure as Mr. Myers. "Where are the proofs that the mortality from typhoid fever in any country has been reduced by the general use of the 'appropriate anti-toxin?' Where are we to look for similar evidence regarding mortality from Mediterranean or yellow fever? Has the mortality from snake-bite been diminished in any appreciable degree by the employment of a remedy regarding whose use we are assured there is hardly a failure on record?" If so where are the statistics? There are none. It is a claim of the laboratory."

Professor Hodge, of Clarke University, declared that "God clearly gives to man every sanction to cause any amount of physical pain which he may find expedient to unravel His laws." Dr. Leffingwell, lacking the

necessary general acquaintance with the principles of ethics, can not accept this enunciation of the vivisector's creed, and marvels that God should hide facts and give torture the right to find them.

"What may we hope to accomplish in the reform of vivisection as it exists to-day? . . . It seems to us that, first of all, there must be the gradual creation of public sentiment which shall be eager, not so much to approve all vivisection, or to disapprove it all, as to know with certainty the facts. Take, for example, the question of vivisection in institutions of learning. To what extent is it carried on, merely to demonstrate what every student knows in advance? . . . *The removal of the secrecy that so generally enshrouds vivisection is the first and most important step toward any true reform.* [My italics.]

"And finally there must come the regulation of vivisection by law. . . . *The law ought to bring upon official records the number of experiments performed, the objects which were in view, the results which were attained, the species of animal upon which the investigations were made, the anesthetics which were administered, and everything that pertains to the prevention of pain.*" [My italics.]

This is a quite voluminous notice of Dr. Leffingwell's eleven-page article to take in this JOURNAL. I believe, however, that it is justified. Further, I would suggest that that article be copied verbatim by all magazines interested in the promotion of humanitarian principles. A more philosophic treatment of what has unfortunately become a very much confused subject, it has not been my fortune to discover; a more concise indication of the ends toward which reform should bend its energies has not yet appeared in print. I conceive that Dr. Leffingwell's reply, in the thoughts of all right-minded persons, will consign such ethical sophistries as are contained in Mr. Myers's paper to the limbo of eternal scorn. Vivisection, as a problem calling for immediate solution, does not demand 'a general knowledge of the principles of ethics and psychology'; it calls for a pragmatic acceptance of our direct intimations of its evils. "No one," says Goethe, "knows what he is doing while he acts aright, but of what is wrong we are always conscious." Those who, in this connection, subordinate the practical impulse toward the alleviation of animal woes to the logical demonstration of its validity, would do well to read Aristotle on the golden mean. Publicity and restriction, not total condemnation, is the key-note of Dr. Leffingwell's appeal, an appeal to which every one should lend support. PHILIP HYATT TARR.

COLUMBIA UNIVERSITY.

The Soul—A Study of Past and Present Beliefs. L. D. ARNETT. *American Journal of Psychology*, April and July, 1904. Pp. 121-200, 347-382.

Ninety-one out of the one hundred and fourteen pages occupied by this study contain little more than the notes of a student summarizing his reading as he peruses the literature of the subject. The last twenty-three pages report the result of a questionnaire-study on the same topic.

The author states that he does not pretend to settle any disputed point

as to the nature of the soul, and that his intention has been merely to gather together information of which he felt the need. Had this work been offered as a finished history of the ideas that have been held concerning the soul, a long series of criticism would have to be made. In the present case, however, one may only thank the author for his painstaking and praiseworthy study. Its scope may be gathered from the following outline.

Mr. Arnett begins with the ideas of the soul entertained by non-civilized peoples (pp. 122-153). He deals with the influence of dreams, the various forms ascribed to the soul (birds, butterfly, mouse, serpent, lizard, etc.; the shadow, reflection; spirits, ghosts, etc.); the number of souls; its localization (in the blood, the bones, the breath, etc.). The different words used for soul by civilized and non-civilized peoples are given and, to some extent, discussed from the standpoint of philology.

The second part is a summary of the philosophical views (pp. 153-200 and 347-359). It begins with those of the Greek thinkers (pp. 153-164). The others are classified under three heads. (1) Theological ideas of the soul (neo-platonic doctrines, the Church Fathers, the scholastic philosophers and the opinions of the Church of to-day. Pp. 164-185). (2) Philosophical ideas (the views of those philosophers who have been relatively independent of religious beliefs. Pp. 185-200). (3) Psychological theories (the opinions of Descartes, Locke, Hume, J. S. Mill, Herbart, and of a few of our contemporaries. Pp. 347-359).

On pages 357 and 358 the author sketches, by way of conclusion, what appears to him to be the five successive steps in the genetic history of the soul:

1. The biological soul—the soul made coextensive with life itself. Extinct species represent the loss of so much of the *psyche*.
2. The phyletic, or race soul: the species regarded as a type of soul. Every animal is regarded as possessing a specific type of soul, that belonging to his species. The phyletic soul represents a differentiation of the biological soul.
3. The individual soul, *i. e.*, the type represented in the writings of Royce, Schiller, etc. It is a special form of the phyletic soul and is the result of heredity.
4. Personal consciousness—our individual experience.
5. Attention, *i. e.*, a cross-section of the present moment. It is the unity of apperception.

The study of the present ideas of the soul based upon the answers to a set of questions does not yield any very definite result. It is, however, interesting and valuable in that it gives precision and factual support to certain opinions.

The preponderant influence of religious teaching upon our ideas of the soul, and the difficulty with which psychological conclusions affect those beliefs have attracted the author's attention. Something in some way corresponding to the traditional notion of the soul seems to persist even in the consciousness of those who, under the influence of psychology, have theoretically discarded the 'soul.'

JAMES H. LEUBA.

Ueber Fixation im Dämmerungssehen. RICHARD SIMON. *Zeitschr. für Psych. u. Physiol. d. Sinnesorgane.* Bd. 36, 1904. S. 186-193.

The author finds that each eye has a definite, habitual way of fixing peripherally a small point in a black field, which is so faintly illuminated as to be invisible on the fovea, although visible on the surrounding region. Thus in one subject the left eye regularly fixed the stimulus by means of a point directly over the fovea, while the right eye received the stimulation on a point above and to the temporal side of the fovea. When the eyes came to these positions involuntarily there was no 'feeling of fixation'; but it was possible voluntarily to fix the faint stimulus in several peripheral positions, and in that case also there was no more 'feeling of fixation' than there is 'when the unadapted eye sees an object in indirect vision.' The degree of adaptation of the eye affects the position of fixation which it automatically assumes; the unadapted eye comes to lie so that the faint stimulus falls several degrees away from the fovea, but with increasing adaptation this point approaches the fovea. Intensity of stimulus (always below the foveal threshold) has the same effect as adaptation.

The foveally invisible dot can not be fixed perfectly. "True nystagmus is not present; but a certain quivering of the object fixed easily happens, and this in all probability depends on slight involuntary eye movements, to be explained because it is much harder to maintain perfect fixation on parafoveal points of the retina than on the fovea." Such hyperphorias of the eyes when the field is dimly illuminated considerably interfere with the stereoscopic vision that Nagel has shown to be possible for the adapted eyes, and with illuminations under the foveal threshold.

EDWIN B. HOLT.

HARVARD UNIVERSITY.

Zur Kenntnis des zentralen Sehaktes. SIGMUND EXNER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 36, 1904. S. 194-212.

'The occasion for this is offered by the new and valuable discoveries of Hitzig, and a related series of experimental results recently obtained by Shinkichi Imamura.' If in the dog all the visual fibres that go to the occipital lobe of one side are destroyed, there results a double homonymous hemiamblyopia of the same side of the visual field; this may be demonstrated by the 'sausage perimeter,' in which the animal standing before a row of sausages consents to eat all that he sees. Almost the same visual disturbance is brought about by extirpating a portion of the cortex in the motor (frontal) region. Now E. Hitzig found in 1900 that when a dog had recovered from the hemiamblyopia due to the occipital operation, the frontal operation would produce no renewal of the amblyopia; and conversely, if most of the motor region was first removed, and, after the animal had recovered, a part of the occipital, the amblyopia would not reappear. 'The extirpation of the motor cortical area had apparently made the animal immune to any hemiamblyopia that might be expected

from a lesion of the visual lobes of the same side.' But if the first operation was in the occipital lobe of one side and the second in the same region of the other side, the hemiamblyopia of the first operation would be reestablished by the second. H. Munk contested Hitzig's results, but Imamura has now confirmed them.

Exner proposes, in explanation of these phenomena, that, after extirpation of the fibres to the occipital lobe, fibres of the corpus callosum supply the requisite afferent currents from the other side of the brain. This would particularly well explain the return of amblyopia after operation of the second occipital lobe. The suggestion is in so far confirmed that Imamura found that if, after an animal had recovered from an operation on one visual lobe, he then severed the callosal fibres, the amblyopia returned *and was now permanent*. But Exner's explanation seems not to account for the fact that, after recovery from operation of the motor or visual region, an operation of the other of those regions (on the same side) brought no return of the disturbance to vision. The paper includes minor details, specially regarding alternating hemiamblyopia, and an instructive discussion of the physiology of consciousness—this last quite in the vein of the venerable author's '*Entwurf*.'

EDWIN B. HOLT.

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JOURNALS AND NEW BOOKS

AMERICAN JOURNAL OF PSYCHOLOGY. January, 1905, Vol. 16, No. 1. *The Psychology of Dreams* (pp. 1-34): J. R. JEWELL.—A questionnaire study based on replies from 800 normal-school students and some dream diaries, in which the replies and the literature on dreams are well used. Sixteen deductions are given; one is indicative: 'There is no mode of functioning of the mind in the waking state that may not take place during sleep.' *Psychology of Æsthetics* (pp. 35-118): L. J. MARTIN.—This article is a report of some 'experimental prospecting in the field of the comic.' Ingenious modifications of some of the well-known psycho-physical methods are used to secure effects of comic pictures on five or six observers. A questionnaire was also used with these same observers and a report of their choice of historical theories of the comic is given. *Primitive Hearing and Hearing-words* (pp. 119-130): A. F. CHAMBERLIN.—A brief statement of the acuteness of hearing among primitive peoples, and of the words used in various languages to describe the phenomena of hearing. *Memory of a Complex Skillful Act* (pp. 131-133): E. J. SWIFT.—After two years of intermission two subjects take up a former practice exercise to determine the efficiency of skill after the long rest. The results show no appreciable loss of skill and the subjects report only a temporary fatigue as interfering with the execution of the series of ball-tossing. *Literature. Notes.*

THE PSYCHOLOGICAL REVIEW. January, 1905, N.S., Vol. XII., No. 1. *The Experience of Activity* (pp. 1-17): WILLIAM JAMES. - President's address before the American Psychological Association, Philadelphia Meeting, December, 1904. An abstract of the address appears in Vol. II., No. 3, of this JOURNAL, on page 58. *The Relation of Perceptive and Revived Mental Material as Shown by the Subjective Control of Visual After-images* (pp. 18-40): TH. H. HAINES and J. C. WILLIAMS. - This article adduces experimental evidence of the interference of the memory image or voluntarily aroused subjective color impression with the after-image. The explanation of the phenomena is sought in the efferent fibers of the optic nerve. *The Effect of Verbal Suggestion upon the Estimation of Linear Magnitudes* (pp. 41-49): JOSEPH E. BRAND. - Certain purely arbitrary suggestions of possible errors of estimation appear in general to have a positive influence upon the subject's estimation of magnitude. *Experiments on the Unreflective Ideas of Men and Women* (pp. 50-66): GENEVIEVE SAVAGE MANCHESTER. - The author has repeated the earlier study of Professor Jastrow of the 'Surface' or unreflective ideas of men and women students, as preliminary to a study of the mental differences of the sexes.

REVUE DE PHILOSOPHIE. December, 1904. *L'Atmosphère métaphysique des Sciences naturelles, I.* (pp. 693-711): P. VIGNON. - A scientific philosophy is analytic monism (mechanism) or synthetic monism (pantheism) or theism. The first can not explain correctness of thought, the second neglects the diverse scientific methods and individual differences. The third is the presupposition of all science which implies an original productive force. *La Théorie Physique, II.: La Structure de la Théorie Physique* (pp. 712-737): P. DUHEM. - A physical experiment is not only observation but interpretation, resulting in an abstract symbolic judgment. Only symbolism renders possible the use of instruments. Testimony in non-scientific matters is surer and simpler than, but not so detailed or precise as that in scientific subjects. *Les Notions infini et de parfait* (pp. 738-757): CH. HUIT. - Up to and including Aristotle these notions were distinct; in Plotinus they were identified, though the infinite was also used to signify the negative property of unlimitedness (*à suivre*). *Revue critique de Sociologie* (pp. 758-764): G. DE PASCAL. - Sociology as at present understood is too wide, has not defined its object and method clearly. Its terminology also is obscure and somewhat pedantic. *À propos d'un Livre récent* (pp. 765-770): J. GRASSET. - A recent anonymous book, *Les Conflits de la Science et des Idées modernes*, defends religion without hostility to science. Science is non-moral and can not defend or refute religion, which states the ideal. *Discussion sur l'Abstraction* (pp. 771-784): V. BERNIES ET J. GARDAIR. Analyses et Comptes Rendus: C. Labeyrie, *Dogme et Métaphysique*: A. B. J. Serre, *Ernest Hello: L'Homme, le Penseur, l'Écrivain*: T. DE VISAN. L. Roure, *Hippolyte Taine*: E. NUSBAUMER. *Études sur la Philosophie morale au XIX^e siècle*: F. M. W. R. Paterson, *L'Éternel Conflit (tr. de l'anglais)*: F. M. *L'Année sociologique*: G. P. A. Castelein, *Droit Naturel*: G. DE

PASCAL. L. de Contenson, *Syndicate-Mutualités-Retraites*: G. P. J. E. Fidaio, *Le Droit des Humbles*, *Études de Politique sociale*: G. DE PASCAL. G. Lechalas, *Introduction à la Géométrie générale*: S. J. DELAPORTES. *Cours de M. Bergson au Collège de France*. *Cours de M. Sertillanges*. *L'Enseignement de la Philosophie dans les Universités*. *Nominations dans l'Université*. Nécrologie.

REVUE DE PHILOSOPHIE. January, 1905. *La Pensée philosophique et la Pensée mathématique*, I. (pp. 5-24): X. MOISANT. - Present emulation of mathematics by philosophy is vicious. Mathematics is due to the work of the imagination upon selected representations and is divorced from the reality which philosophy studies. Mathematics, describing in static terms, can not lay hold of the real which is changing, dynamic. Again, it describes in detail, by parts, while philosophy looks not for analysis so much as for synthesis, for a view of the whole system of reality. *La Théorie physique: La Loi physique* (pp. 25-43): P. DUHEM. - Physical laws are relations between symbols, whose meaning depends on one's accepting a whole group of theories. They are neither true nor false, but are approximations, provisory, relative to our point of view. This is due to their symbolic character. *Un Chapitre de l'Histoire de la Métaphysique: les notions d'infini et de parfait (suite et fin)* (pp. 44-66): CH. HUIT. - The lesson of the development of these ideas from Jewish theology and the medieval church to the present is that they belong together. The perfect is the only true infinite. The mathematical infinite is only the indefinite. God contains the fusion of the two ideas. *Revue critique: Doctrines et opinions relatives à la Philosophie biologique*, I. (pp. 67-93): P. VIGNON. - A summary account of recent biological-philosophical literature. *Discussion sur l'Abstraction* (pp. 94-98): CTE. DE VORGES. Sommaire des Revues. Analyses et Comptes Rendus: A. Réville, *Histoire du Dogme de la Divinité de Jésus-Christ*: J. V. BAINVEL. G. H. Luquet, *Aristote et l'Université de Paris pendant le XIIIe Siècle*: CH. HUIT. J. Payot, *La Croyance, sa Nature, son Mécanisme, son Education*: C. LABEYRIE. *L'Education de la Démocratie, Enseignement et Démocratie, L'Education fondée sur la Science*: T. DE VISAN. G. Noblemaire, *Concordat ou Séparation*: R. DUVAL. A. Dufourcq, *La Pensée chrétienne. Textes et Études. Les Saints. Saint Iréné*: P. DUHEM. Mgr. Le Camus, *Fausse Exégèse, mauvaise Théologie*: A. B. *Bulletin de l'Enseignement philosophique. L'Enseignement philosophique au Collège de France*. Nécrologie.

JOURNAL DE PSYCHOLOGIE, NORMALE ET PATHOLOGIQUE. January-February, 1905, Vol. 2, No. 1. *Aphasie motrice à répétition chez une morphinomane* (pp. 1-15): ROY ET JAQUELIER. - A woman of sixty-one years, who had been addicted to the morphine habit for twenty-eight years, was found to suffer both loss of speech and ability to write even her own name from a copy. No lesion of any kind was found. After two months' treatment the defects both disappeared entirely. The authors claim this the first case of its kind on record. *Psy-*

chologie comparée de quelques manifestations motrices, communément designées sous le nom de 'tics' (pp. 16-41): ANDRÉ LALANDE. - The author makes a plea for more exact definition. Of the phenomenon designated by the name 'tic,' such normal habits as tapping one's finger when in deep thought, as well as the automatic rhythmical movements of idiots, should be excluded from the content of the term. From a psychological point of view, 'tic' can apply only to the reflex bulbar manifestations in psychasthenia. *Notes and Discussions. Documents et remarques sur la conscience des mots dans la langage* (pp. 37-41): ANDRÉ LALANDE. - "Language is then not formed of the words in the consciousness of those who employ it any more than a melody is formed of the notes first thought out individually, which compose it." *Revue des périodique: psychologie normale* (pp. 42-75); *psychologie pathologique* (76-96).

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. October, 1904, Band 36, Heft 4. *Ein Beitrag über die sogenannten Vergleichen übermerklicher Empfindungsunterschiede* (pp. 241-268): JOS. FRÖBES, S.J. - Experiments on lifted weights by method of constant stimuli to analyze factors which influence estimates. Results and introspective notes show that absolute impression of variable stimulus largely determines judgment. *Untersuchungen über die akustische Unterschiedsempfindlichkeit und die Gültigkeit des Weber-Fechnerschen Gesetzes bei normalen Zuständen, Psychosen und funktionellen Neurosen* (pp. 269-293): G. A. HÖFFER. - The discriminativeness for differences in sound intensities is approximately constant for both normal and abnormal persons. In only two out of twenty patients suffering with various forms of mental disease was the absolute sensible discrimination subnormal. *Untersuchungen über den galvanischen Lichtreflex* (pp. 294-295): DR. BUMKE. - Investigation of the relation between the optical and pupillomotor effect of the galvanic stimulus. Experiments on fatigued eyes show that the light sensitivity in the state of exhaustion is increased while the reflex sensitivity is decreased very markedly. *Literaturbericht*.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. December, 1904, Band 36, Heft 5 u. 6. *Eine Enquête über Depersonalisation und 'Fausse Reconnaissance'* (pp. 321-343): G. HEYMANS. - Result of this questionnaire study seems to justify the conclusion that there are two types, in one of which these phenomena occur markedly more often, in the other as markedly less often than the average. The first type is characterized by strong emotional temperament, uneven temper, tendency to spasmodic effort and little aptitude for mathematics; the other evenness of temper, regularity and little aptitude for languages. Explanation of phenomena is to be sought in temporary relaxation of attention. *Ein Beitrag über die sogenannten Vergleichen über merklicher Empfindungsunterschiede. Zweiter Teil* (pp. 344-380): JOS. FRÖBES, S.J. - A repetition of Ament's experiments on light intensities. The surprising result was obtained for high intensities that the variable stimulus B,

adjusted between A and C, far exceeded the arithmetical mean. This is attributed to the fact that the judgment is determined largely by the brightest disk which tends to claim the attention. *Über die Methode der Kunstphilosophie* (pp. 381-416): KONRAD LANGE. - A criticism of the logical method of Tolstoi, Laurila and Volkert and their emphasis upon the ethical in art. The experimental method is insufficient. The historical method, with emphasis upon the evolutionary point of view, is advocated. *Über Assoziationsreaktionen, die auf optische Reizworte erfolgen* (pp. 417-430): HENRY J. WYATT. - General tendency to form associations with words of the same class shown. In three observers the constant tendency was to make the associations with words of different class; in the remaining five as uniformly with words of same class. *Über monokulares körperliches Sehen nebst Beschreibung eines als monokulares Stereoskopbenutzten Stroboskopes* (pp. 431-439): M. STRAUB. - It is maintained that there is no real difference between monocular and binocular perception of depth, hence the importance of a study of monocular stereoscopy for the theory of vision. Both depend on the parallax. *Zwei akustische Demonstrationen* (pp. 440-445): A. SAMOJLOFF. - (1) A stroboscopic analyzer to demonstrate overtones. (2) The violin as an acoustic instrument demonstrated by placing a small mirror on the bridge and its reflection thrown on a screen. Literaturbericht.

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. November, 1904. Band 125, Heft 1. *Zu Kuno Fischers 80. Geburtstag* (p. 1): R. FALCKENBERG. *Die Psychologie des Joh. Bapt. van Helmont in ihren Grundlagen* (pp. 2-15): F. STRUNZ. - This experimental scientist maintained that knowledge of one's own soul precedes and is more sure than that of bodies. He distinguishes the insight, will and love of the spirit from that of the sensible soul in that the former perceives and acts and feels without sense or bodily exercise. *Die Idealität der ästhetischen Gefühle* (pp. 15-33): ANNA TUMARKIN. - By ideality those following Schiller have meant serenity; it should mean separation from practical life. Esthetic feeling is not serene. Esthetic sensibility is cultivated only through loss of practical power. *Bericht über die Erscheinungen der Französischen philosophischen Litteratur der Jahre 1900 bis 1901* (pp. 33-47): E. DUROI. - Special attention is paid to Couturat's 'La logique de Leibnitz,' and Renouvier's 'Les dilemmes de la métaphysique pure.' *Ethik des Mitleids* (pp. 47-53): H. SCHMIDKUNZ. *Sittlichkeit und Kultur* (pp. 53-68): B. BAUCH. - The moral worth of the good will must be transferred to the struggle of mankind with itself towards the ideal virtue, though that struggle does not necessarily imply exercise of the good will, for in it alone can the good will find exercise. The teleological judgment of conduct concerns culture and not morality proper. *Recensionen* (pp. 69-107). J. Bergmann, *Untersuchungen über Hauptpunkte der Philosophie*: WALTER. E. Wentscher, *Das Kausalproblem in Lotzes Philosophie*: R. FALCKENBERG. O. Kraus, *Zur Theorie des Wertes*: H. SCHWARTZ. G. Wobbermin, *Theologie u. Metaphysik*: T. ELSENHAUS. H. Vaihinger, *Nietzsche als Philosoph*: P. SCHWARTZ-

KOPF. Th. Lipps, *Vom Fühlen Wollen und Denken*: v. ASTER. E. Marcus, *Kants Revolutionsprinzip*: O. SCHÖNDÖRFER. L. W. Stern, *Zur Psychologie der Aussage*: O. KOWALEWSKI. Fr. Jodl, *Lehrbuch der Psychologie*: ZIEHEN. F. Paulsen, *Philosophia militans*: E. PFENNIGSDORF. Ossip-Lourié, *La philosophie russe contemporaine*: W. v. TSCHISCH. W. Hellpach, *Die Grenzwissenschaften der Psychologie*: M. ISSERLIN. *Notices. New Books.*

ANNALEN DER NATURPHILOSOPHIE. November, 1904. Band 4, Heft 1. *Zur Theorie der Wissenschaft* (pp. 1-28): W. OSTWALD. — From a survey of the sciences, which are grouped under the divisions of Mathematics, Energetics and Biology, it is found that the development of each science is the formation and interrelation of concepts through certain abstractions from experience, the relations being either rules or laws. The next step in scientific development is to make the process of discovery itself systematic. *Ueber das Studium der Sprachkurven* (pp. 28-47): E. W. SCRIPTURE. — Emphasis is laid on the great possibilities in scientific discovery as well as in matters of more general interest that lie in the acoustographic instruments. Four fundamental principles of a theory of the voice are advanced. A method is given for detecting the melody in the smallest intervals of speech. *Neo-Vitalismus in der modernen Biologie* (pp. 47-102): W. BIEGANSKI. — The course of both the mechanical and the vitalistic ideas in biology is traced from the days of Greek science to the present, leading to the complete dominion of the mechanical (about 1842) and the vitalistic reaction brought about by Lange and Schopenhauer. Vitalism rests on an idealistic epistemology; mechanism on an empirical. Modern vitalism does not differ fundamentally from the old. Mechanism is true as a method, not as an epistemological theory. *Aus dem kristallographisch-chemischen Grenzgebiet* (pp. 102-115): v. GOLDSCHMIDT. — Illustrations of the method of determining the form of crystal formation through examining the work of acids and solvents on crystalline spheres. *Das Duale System der Harmonie* (pp. 116-136): A. v. OETTINGEN. — The distinction between acoustic and musical consonance is made, and a technical discussion with Stumpf on the subject follows. The dual system is distinct from Helmholtz's explanation of harmony. *Neue Bücher*: Reviews by W. O., including the following: K. Heim, *Psychologismus oder Antipsychologismus*. A. Höfler, *Abhandlungen zur Didaktik und Philosophie der Naturwissenschaft, II., Zur Gegenwärtigen Philosophie*. P. H. Siewers, *Mechanismus und Organismus*. H. de Vries, *Befruchtung und Bastardierung*. A. Stöhr, *Zur Philosophie des Uratoms und des Energetischen Weltbildes*. H. Friedmann, *Die Konvergenz der Organismen*. L. Volkmann, *Grenzen der Künste*. L. Volkmann, *Naturprodukt und Kunstwerk*. G. Fischer, *Die Theorie der direkten Anpassung und ihre Bedeutung für das Anpassungs- und Descendenzproblem*. M. Verworn, *Naturwissenschaft und Weltanschauung*.

Falkenberg, R. *Geschichte der neueren Philosophie von Nikolaus von Kues bis zur Gegenwart*. Fünfte verbesserte und ergänzte Auflage. Leipzig: Veit & Comp. 1905. 8vo. Pp. 11, 609. 8 M.

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- University of California Publications. *Philosophy*. Studies in Philosophy prepared in commemoration of the seventieth birthday of Professor George Holmes Howison. Contributions by E. B. McGilvary, S. E. Mezes, G. M. Stratton, C. H. Rieber, C. M. Bakewell, E. N. Henderson, J. D. Burks, A. O. Lovejoy, H. W. Stuart, T. de Lopez de Laguna, K. Dunlap, H. A. Overstreet. Berkely: The University Press. 1904. Large 8vo. Pp. 262.

NOTES AND NEWS

To perpetuate the memory of C. L. Herrick in the scientific world and among the friends of Denison University, and as a tribute of gratitude for his services, the Denison Scientific Association has appointed a committee to secure a fund to be known as 'The C. L. Herrick Memorial Fund.' The first purpose of the committee is to secure for Denison University Dr. Herrick's scientific library, which his family is obliged to dispose of. It is hoped, however, that only a portion of the fund will be used in procuring the library and that an adequate principal may be set aside, the income of which will be available in maintaining the serials represented in the library and in otherwise fostering the interests of science. A friend of the institution has promised to duplicate all subscriptions made for this purpose before July first next. Subscriptions may be sent to Professor Frank Carney, Denison, Ohio.

M. HENRI BERGSON has been appointed professor of modern philosophy in the Collège de France, to succeed the late Gabriel Tarde.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

RADICAL EMPIRICISM AND WUNDT'S PHILOSOPHY

TO one who has been, even in a modest way, a student of Wundt's philosophical writings, it is a matter of no small surprise that current American discussions such as those which have been conducted by Dewey, James and others, have so largely ignored the Wundtian philosophy. Many of the positions which Wundt clearly defined in his 'System der Philosophie,' and in his later articles in the 'Studien' are identical with the positions now defended by our American empiricists. Furthermore, there are certain phases of Wundt's discussions which one may unhesitatingly say are clear critical treatments of problems which have not yet been finally disposed of by American empiricism. It will not be unprofitable to call attention to some of the similarities and some of the differences between Wundt's philosophy and current American thinking, especially that phase of American thinking which is represented by James's recent articles.

The most obvious agreement with which we have to deal is found in the definitions given to reality. Thus Wundt says in his 'System' (p. 92), "There is no subject and no object whatever outside of our abstracting and analyzing thought. Reality is at once subject and object, thinker and thought." Indeed it is '*unmittelbare Erfahrung*' or immediate experience which constitutes the whole of reality. Everywhere in his writings Wundt strives to make clear the necessity of adopting this definition of reality. He finds, as does James, that such a view of reality 'presents so many points of difference, both from the common sense and from the idealism that have made our philosophical language, that it is almost as difficult to state it as it is to think it out clearly.'¹ In passage after passage Wundt pauses to say that his view of reality completely changes the whole character of the discussion of philosophical and psychological problems. Thus with reference to the problem of the relation of body and mind he writes in the 'Outlines of Psychology,'² "So long as

¹ James, THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 21, p. 570.

² Second English edition, p. 358.

body and mind are both regarded as substances, this relation (*i. e.*, the relation between them) must remain an enigma in whatever way the two concepts of substance may be defined." If, however, we adopt the attitude towards reality which is fundamental to the whole system of Wundtian philosophy, we shall not define mind and body as substances. We shall find that body is one of the logical constructs derived by the internal working over of immediate experience, and mind likewise is nothing but a name for the unity of real relations. Both mind and matter are included in the reality of immediate experience. "There is only *one* experience, which, however, as soon as it becomes the subject of scientific analysis, is in some of its components open to *two* different kinds of scientific treatment. . . ."³ The one treatment yields the concept body, the other treatment yields the concept mind.

I need not quote from James's articles, which are so fresh in all our minds, to show that the definition of reality as given by the radical empiricist and the definition as given by Wundt have much in common. Both definitions cut away from the traditions of ontology and give us a distinctly epistemological and psychological starting-point for metaphysics. Both are empirical in the same meaning of that term.

Going beyond the general definition of reality, one can find many special positions in the writings of Wundt and James which are strikingly alike. I shall not refer for the moment to these likenesses, for, after all, the routes by which the two writers reach their special conclusions are different, and the difference in method is the most obvious fact to the reader.

James adopts, as we all know, the pragmatic method of explaining how the particular realities of common life issue from the primary reality of pure experience. A given phase or bit of pure experience finds its corroboration or terminus in some second phase or bit of experience. When the second bit of pure experience fulfills the first, there comes the sense of satisfaction and the realization of certainty, which is our justification for objectifying experiences. Every first bit of experience is, furthermore, directed towards the future, as well as corroborated by the past. "It is 'of' the future in so far as the future, when it comes, will have to continue *it*."⁴ This kind of reference to a future makes it necessary for James to say, "The beyond must of course always in our philosophy be itself of an experimental nature."⁵

A philosophy which makes the future frankly of an experimental

³ 'Outlines of Psychology,' second edition, p. 361.

⁴ *L. c.*, p. 569.

⁵ *L. c.*, p. 569.

nature undoubtedly has a difficult task in drawing to it the adherence of the common thinker. That my to-morrow's sunrise is of an experimental nature, is proverbially a difficult proposition to accept.

Let us turn to Wundt's method of deriving from the primary reality of experience the particular realities of life. He says something like this. In the midst of the flux and change of immediate experience there are certain factors which vary less rapidly than do other factors. The kaleidoscope has a general outline which does not change as rapidly as the particular patterns. This relatively greater permanency of certain factors is enough to break up primary experience into certain distinguished phases. The past furnishes in this way, through the changes within experience, sufficient justification for analysis into particulars. And, after analysis has been effected, the relatively most stable factors are the ones most readily and definitely objectified. What is it that science as well as common thinking has come to regard as the most distinctively objective of all facts? Space, answers Wundt. Why? Just because space is the least variable of all the facts of our experience. We are not dependent, according to this view, on the corroborations of the future for the motives for objectification.

Wundt seems by this reference of objectification to the past to escape some of the difficulties of the pragmatic thinking. That the future should corroborate the past is just as natural in Wundt's system as in that of James. But the corroboration is not a new kind of fact with Wundt. It is merely another way of saying that the factors of experience which are relatively stable now are accepted as likely to be stable to-morrow and the next day, and are in corroborative experiences found to be stable as expected.

Wundt pushes the matter still further. Among the regularities and changes of experience there come up certain contradictions. One experience does not on its face show agreement with what follows. Thus, I see a mass of color now, and a moment later it is gone, while the surrounding factors seem to continue relatively unmodified. Here is, in the fact of change, a contradiction between successive experiences rather than the corroboration for which James looks. Such contradictions in experience, says Wundt, are the motives for an active reconstruction of experience. I try to find some means of bridging over the break in my experience. I actively interpret the disappearance of the mass of color. I unify the mass to begin with, and then I put under the colors some substratum that will explain for me the way in which they are carried out of my field of vision. I fill in experience, in other words, with a construct. I use for my case of the colors the construct substance. The construct is, when once built up, my unifying, satisfying factor. I did not find it in

this form in the first bit of experience, but experience drove me to make it up in order to secure internal harmony. The construct is not an original part of immediate reality, it is a supplementary phase of experience.

Wundt goes even further than this. There may be higher constructs than these which are necessary for the organization of experience. Thought often carries itself forward into a purely ideal realm. There are then exercised 'free acts which are carried out by thought in obedience to inner impulses, without any compulsion from perception.'⁸ The building up of the idea of infinity is an illustration of this purely ideal activity.

There is in this doctrine of Wundt's system, which recognizes the possibility of transcending original experience, a strength and comprehensiveness which our American empiricism can, it seems to me, hardly afford to overlook. Wundt is not a *radical* empiricist. He has used, in some articles published in the 'Philosophische Studien' later than the 'System,' the title 'critical realism' as descriptive of his general position. Critical realism starts with pure, or immediate, experience, just as does radical empiricism. Critical realism loses nothing of the empiricism which we are all seeking in some fashion to attain. But critical realism does not wait for validity to grow out of corroborations. Critical realism finds that the data of original reality grow and develop by their own progressive variations and relative stabilities. There is here just as much recognition of process as in the thinking of James. There is just as much seeking for the given relations, but there is a frank recognition of the possibility of creative synthesis by which new relations and new demands shall develop. In short, critical realism is radically empirical to begin with, and clearly conscious of its empirical basis throughout, but it does not hesitate to recognize processes which elaborate the original data of experience and bring in new and harmonizing links.

Wundt's position in this matter may perhaps be made clear by asking the pragmatist why there is in given experience any impelling desire for new knowledge. Certainly corroborations are not always explicitly in mind when one feels the lack of unity and harmony among present factors of experience. Certainly no practical demand is immediately conserved by much of our every-day scientific investigation. The investigator feels a certain *vis a tergo* pushing him on to find relations which shall organize what is now at hand. Corroboration usually comes after scientific hypothesis, and will hardly explain why one formulates hypotheses. Indeed, the very direction in which corroboration is to be sought is in the great majority of cases specifically pointed out by hypothesis. Not merely the fact, then,

⁸ 'System,' p. 79.

that present experience reaches towards the future must be recognized; it must also be recognized that there are characteristics in the present which determine the exact way in which this reaching forward takes place. The kind of determination of knowledge which James emphasizes, namely, that which consists in corroboration, will, if taken by itself, leave the future, as we have seen, always experimental. The determination of knowledge from behind is in no way incompatible with future corroborations, but it gives to the present a standing and independence which are more in agreement with our usual complacent acceptance of the certainty and objectivity of things.

Another great strength of Wundt's system lies in the fact that he does not find it necessary to minimize distinctions which are of vital importance to both science and plain living. James makes the difference between the extension of things and the spatial characteristics of ideas as insignificant as he can. "Of every extended object," he says, "the adequate mental picture must have all the extension of the object itself." In the next sentence his phrase is again an obvious effort to make the difficulty disappear, for he goes on to say, "The difference between objective and subjective extension is one of relation to context solely." Then follow at length illustration after illustration in which a variety of clearly recognized distinctions between objective and subjective relations are made to seem as unessential as possible. In answer to all this one can hardly refrain from insisting that the first effort ought to be expended in showing how any differences can arise in the midst of a unitary, pure experience. That objective and subjective space are somehow *alike* we all admit, unless, indeed, we refuse to admit the existence of objective space. But how in a world of pure experience can subjective and objective space be different? The difference must not be minimized. If you say to me my idea of a mile is a mile long I am at least at liberty to retort that I am not accustomed to having my ideas described in that way. I save the word mile for the context thing. This being true, the likeness of my idea to the thing is not the matter of discussion; I insist on knowing why one context can make me use the descriptive word mile for a certain bit of experience, and immediately another context can forbid my using the same word for the same bit of experience.

Wundt recognizes this difference fully; his first concern has been to examine it. Given an all-inclusive experience, he asks as his first question, what is the reason for the breaking up of experience? Why is that relation between my sensations which I call subjective space

⁷ James, THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 18, p. 488.

different from the objective relation which I study in my geometry? Because, he answers, after I have a great variety of subjective spatial arrangements, I can abstract the arrangement phase of experience from this or that content; and when I find how permanent the mode of arrangement is as contrasted with the content, I can objectify the spatial arrangement in a unique fashion, and mark it off from my single experiences as objective space. The emphasis with James is on likeness. He is so radically empirical that he seems a little anxious lest his empirical basis shall get away from him. Wundt is no less empirical, but he is ready to admit the necessity in experience of reconstructions and abstractions which rework and redefine the original data of experience.

Another distinction which James tries to make seem unessential is the difference between your object and mine. Like subjective and objective spaces, so myself and other selves do not seem to dwell together in harmony in pure experience. Cover up the distinction between different selves, and the way seems much clearer for a single formula of pure experience. But the distinction between your thing and my thing and yourself and myself will not down. James has in his most recent article⁸ gone through some of the objections which may be urged against his position that your thing is identical with my thing. He argues in Section III. of that article that one may have in his own individual experience successive experiences of the same thing, and yet may immediately recognize all these successive experiences as of the same object. Wundt would call a halt even at this preliminary conclusion. Wundt would object that one recognizes the sameness of the thing when the thing is presented in successive experiences, not immediately, but only by actively abstracting from a whole cluster of differences which do, as a matter of actual experience, present themselves. Three experiences of *M* are, according to Wundt, all referred to the same object *M*, only by a crystallizing of the like factors of the three different experiences into an objective reference. The objective reference is what needs to be explained since it does not come full-fledged out of the single original experience. There is no objective reference without a process within the process. And now we see why Wundt would not rush forward, as does James, and say that since there is no reason why my three experiences should not be of the same *M*, therefore we need have no hesitation in believing that your experience and mine and that of my neighbor may also be of the same object. My experience, Wundt would say, refers to an object only by virtue of a developed outward reference. Your object does not have the same history as

⁸ 'The Thing in Its Relations,' JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. II., No. 2, pp. 29-41.

mine. The transition from subject to subject is even more radical. It is more of a constructive process than the transition from my first experience to my second experience. Wundt does not hesitate to give full emphasis to the distinction between individual experiences. He does not leave the foundation of immediate experience in discussing the concepts by which we bridge over these distinctions any more than does James, but he admits a far-reaching reconstruction within experience.

In short, Wundt goes about his constructive work by dealing with the processes in experience which make for differentiation and secondary reorganization. He holds that in life and in refined scientific thought the emphases within experience and the rearrangements which result from the selections of certain centers of emphasis are of first-class importance. Things are the results of emphasis. Only by reflection and abstraction can things arise; they are secondary. Let me indulge in a somewhat lengthy quotation from Wundt to show how various forms of selective thinking may elaborate the same original data of experience." "It is," he says, "indeed true that there are certain contents of experience which belong to the sphere of psychological investigation and are not found among the objects and processes studied by natural science: such are our feelings, emotions and decisions. On the other hand, there is not a single natural phenomenon that may not, from a different point of view, become an object of psychology. A stone, a plant, a tone, a ray of light, are, when treated as natural phenomena, objects of mineralogy, botany, physics and so forth. In so far, however, as they are at the same time *ideas*, they are objects of psychology, for psychology seeks to account for the genesis of these ideas, and for their relation, both to other ideas and to those psychical processes, such as feelings, volitions, etc., which are not referred to external objects. . . . The point of view of natural science may, accordingly, be designated as that of *mediate experience*, since it is possible only after abstracting from the subjective factor present in all actual experience; the point of view of psychology, on the other hand, may be designated as that of *immediate experience*, since it purposely does away with this abstraction and all its consequences."

Perhaps the disposition which James shows to make little of the distinctions between objective and subjective space, and between your object and mine, is explicable on the ground that James is just now giving us only the introductory chapters of his system. The reason why pure experience breaks up into subjects and objects may come out more fully in later discussions. I am not at all clear that Wundt and James are radically different in their views. As one

* 'Outlines of Psychology,' second English edition, pp. 2 and 3.

reads the two at this moment, however, Wundt seems to have gone much further away from the original data of naïve, pure experience; or perhaps we may be justified in saying, further along the road to the common man's world and the world of science. James evidently feels the necessity at first of meeting the absolutist and the rationalist, and of making good his empirical foundations. Wundt spends much less time clearing the ground and takes up very much more fully the details of discussion which issue from his fundamental thesis. That the final outcome of both systems will have much in common is as apparent as any of the differences in procedure which I have discussed above.

Thus James's striking statement that the notion of consciousness must be abandoned in favor of its pragmatic equivalent in realities of experience can be paralleled by the following quotation from Wundt: "There is no place in psychology for hypothetical supplementary concepts such as are necessary in the natural sciences, because of the presupposition in the natural sciences of an object independent of the subject. The concept of the actuality of the mind, accordingly, does not require any hypothetical determinants to define its particular contents, as does the concept of matter, but quite to the contrary, the concept of actuality excludes such hypothetical elements from the first, by defining the nature of mind as the immediate reality of the processes themselves."¹⁰

Parallelisms such as this one show clearly enough that the temper and tendencies of the two systems are much alike. It is the likeness, after all, which has led me to make these suggestions of a comparison. I shall be satisfied if the differences drop into the background; and I have already indicated that the signs seem to point to a greater convergence, rather than divergence, as the consequences of James's fundamental thesis are worked out.

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HOW TWO MINDS CAN KNOW ONE THING

IN an article in this JOURNAL entitled 'Does Consciousness Exist?'¹¹ I have tried to show that when we call an experience 'conscious,' that does not mean that it is suffused throughout with a peculiar modality of being ('psychic' being) as stained glass may be suffused with light, but rather that it stands in certain determinate relations to other portions of experience extraneous to itself. These form one peculiar 'context' for it; while, taken in another context of experiences, we class it as a fact in the physical world. This

¹⁰ 'Outlines of Psychology,' second English edition, pp. 356-357.

¹¹ Vol. I., p. 477, September 1, 1904.

'pen,' for example, is, in the first instance, a bald *that*, a datum, fact, phenomenon, content, or whatever other neutral or ambiguous name you may prefer to apply. I called it in that article a 'pure experience.' To get classed either as a physical pen or as some one's percept of a pen, it must assume a *function*, and that can only happen in a more complicated world. So far as in that world it is a stable feature, holds ink, marks paper and obeys the guidance of a hand, it is a physical pen. That is what we mean by being 'physical,' in a pen. So far as it is instable, on the contrary, coming and going with the movements of my eyes, altering with what I call my fancy, continuous with subsequent experiences of its 'having been' (in the past tense), it is the percept of a pen in my mind. Those peculiarities are what we mean by being 'conscious,' in a pen.

In Section VI. of another article² I tried to show that the same *that*, the same numerically identical pen of pure experience, can enter simultaneously into many conscious contexts, or, in other words, be an object for many different minds. I admitted that I had not space to treat of certain possible objections in that article; but in a subsequent article³ I took some of the objections up. At the end of that article I said that still more formidable-sounding objections remained; so, to leave my pure-experience theory in as strong a state as possible, I propose to consider those objections now.

I

The objections I previously tried to dispose of were purely logical or dialectical. No one identical term, whether physical or psychical, it had been said, could be the subject of two relations at once. This thesis I sought to prove unfounded. The objections that now confront us arise from the nature supposed to inhere in psychic facts specifically. Whatever may be the case with physical objects, a fact of consciousness, it is alleged (and indeed very plausibly), can not, without self-contradiction, be treated as a portion of two different minds, and for the following reasons.

In the physical world we make with impunity the assumption that one and the same material object can figure in an indefinitely large number of different processes at once. When, for instance, a sheet of rubber is pulled at its four corners, a unit of rubber in the middle of the sheet is affected by all four of the pulls. It *transmits* them each, as if it pulled in four different ways at once itself. So, an air-particle or an ether-particle 'compounds' the different directions of movement imprinted on it without obliterating their several

² 'A World of Pure Experience,' *ibid.*, Vol. I., p. 564, October 13, 1904.

³ 'The Thing and its Relations,' in the present volume of this JOURNAL, p. 29.

individualities. It delivers them distinct, on the contrary, at as many several 'receivers' (ear, eye or what not) as may be 'tuned' to that effect. The apparent paradox of a distinctness like this surviving in the midst of compounding is a thing which, I fancy, the analyses made by physicists have by this time sufficiently cleared up.

But if, on the strength of these analogies, one should ask: "Why, if two or more lines can run through one and the same geometrical point, or if two or more distinct processes of activity can run through one and the same physical thing so that it simultaneously plays a rôle in each and every process, might not two or more streams of personal consciousness include one and the same unit of experience so that it would simultaneously be a part of the experience of all the different minds?" one would be checked by thinking of a certain peculiarity by which phenomena of consciousness differ from physical things.

While physical things, namely, are supposed to be permanent and to have their 'states,' a fact of consciousness exists but once and is a state. Its *esse* is *sentiri*; it is only so far as it is felt; and it is unambiguously and unequivocally exactly *what* is felt. The hypothesis under consideration would, however, oblige it to be felt equivocally, felt now as part of my mind and again at the same time *not* as a part of my mind, but of yours (for my mind is *not* yours), and this would seem impossible without doubling it into two distinct things, or, in other words, without reverting to the ordinary dualistic philosophy of insulated minds each knowing its object representatively as a third thing,—and that would be to give up the pure-experience scheme altogether.

Can we see, then, any way in which a unit of pure experience might enter into and figure in two diverse streams of consciousness without turning itself into the two units which, on our hypothesis, it must not be?

II

There is a way; and the first step towards it is to see more precisely how the unit enters into either one of the streams of consciousness alone. Just what, from being 'pure,' does its becoming 'conscious' *once* mean?

It means, first, that new experiences have supervened; and, second, that they have borne a certain assignable relation to the unit supposed. Continue, if you please, to speak of the pure unit as 'the pen.' So far as the pen's successors do but repeat the pen or, being different from it, are 'energetically'⁴ related to it, it and they will form a group of stably existing physical things. So far, how-

⁴ For an explanation of this expression see above, Vol. I., p. 489.

ever, as its successors differ from it in another well-determined way, the pen will figure in their context, not as a physical, but as a mental fact. It will become a passing 'percept,' *my* percept of that pen. What now is that decisive well-determined way?

In the chapter on 'The Self,' in my 'Principles of Psychology,' I explained the continuous identity of each personal consciousness as a name for the practical fact that new experiences⁵ come which look back on the old ones, find them 'warm,' and greet and appropriate them as 'mine.' These operations mean, when analyzed empirically, several tolerably definite things, viz.:

1. That the new experience has past time for its 'content,' and in that time a pen that 'was';

2. That 'warmth' was also about the pen, in the sense of a group of feelings ('interest' aroused, 'attention' turned, 'eyes' employed, etc.) that were closely connected with it and that now recur and evermore recur with unbroken vividness, though from the pen of now which may be only an image all such vividness may have gone;

3. That these feelings are the nucleus of 'me';

4. That whatever once was associated with them was, at least for that one moment, 'mine'—my implement if associated with hand-feelings, my 'percept' only, if only eye-feelings and attention-feelings were involved.

The pen, realized in this retrospective way as my percept, thus figures as a fact of 'conscious' life. But it does so only so far as 'appropriation' has occurred; and appropriation is *part of the content of a later experience* wholly additional to the originally 'pure' pen. *That* pen, virtually both objective and subjective, is at its own moment actually and intrinsically neither. It has to be looked back upon and *used*, in order to be classed in either distinctive way. But its use, so called, is in the hands of the other experience, while *it* stands, throughout the operation, passive and unchanged.

If this pass muster as an intelligible account of how an experience originally pure can enter into one consciousness, the next question is as to how it might conceivably enter into two.

III

Obviously no new kind of condition would have to be supplied. All that we should have to postulate would be a second subsequent experience, collateral and contemporary with the first subsequent one, in which a similar act of appropriation should occur. The two acts would interfere neither with one another nor with the originally

⁵ I call them 'passing thoughts' in the book—the passage in point goes from pages 330 to 342 of Vol. I.

pure pen. It would sleep undisturbed in its own past, no matter how many such successors went through their several appropriative acts. Each would know it as 'my' percept, each would class it as a 'conscious' fact.

Nor need their so classing it interfere in the least with their classing it at the same time as a physical pen. Since the classing in both cases depends upon the taking of it in one group or another of associates, if the superseding experience were of wide enough 'span' it could think the pen in both groups simultaneously, and yet distinguish the two groups. It would then see the whole situation conformably to what we call 'the representative theory of cognition,' and that is what we all spontaneously do. As a man philosophizing 'popularly,' I believe that what I see myself writing with is double—I think it in its relations to physical nature, and also in its relations to my personal life; I see that it is in my mind, but that it also is a physical pen.

The paradox of the same experience figuring in two consciousnesses seems thus no paradox at all. To be 'conscious' means not simply to be, but to be reported, known, to have awareness of one's being added to that being; and this is just what happens when the appropriative experience supervenes. The pen-experience in its original immediacy is not aware of itself, it simply *is*, and the second experience is required for what we call awareness of it to occur.⁶ The difficulty of understanding what happens here is, therefore, not a logical difficulty: there is no contradiction involved. It is an ontological difficulty rather. Experiences come on an enormous scale, and if we take them all together, they come in a chaos of incommensurable relations that we can not straighten out. We have to abstract different groups of them, and handle these separately if we are to talk of them at all. But how the experiences ever *get themselves made*, or *why* their characters and relations are just such as appear, we can not begin to understand. Granting, however, that, by hook or crook, they *can* get themselves made, and can appear in the successions that I have so schematically described, then we have to confess that even although (as I began by quoting from the adversary) 'a feeling only is as it is felt,' there is still nothing absurd in the notion of its being felt in two different ways at once, as yours, namely, and as mine. It is, indeed, 'mine' only as it is felt as mine, and 'yours'

⁶ Shadworth Hodgson has laid great stress on the fact that the minimum of consciousness demands two subfeelings, of which the second retrospects the first. (Cf. the section 'Analysis of Minima' in his 'Philosophy of Reflection,' I., 248; also the chapter entitled 'The Moment of Experience' in his 'Metaphysic of Experience,' Vol. I.) 'We live forward, we understand backward' is a phrase of Kierkegaard's which Höfding quotes.

only as it is felt as yours. But it is felt as neither *by itself*, but only when 'owned' by our two several remembering experiences, just as one undivided estate is owned by several heirs.

IV

One word, now, before I close, about the corollaries of the views set forth. Since the acquisition of conscious quality on the part of an experience depends upon a context coming to it, it follows that the sum total of all experiences, having no context, can not strictly be called conscious at all. It is a *that*, an Absolute, a 'pure' experience on an enormous scale, undifferentiated and undifferentiable into thought and thing. This the post-Kantian idealists have always practically acknowledged by calling their doctrine an *Identitätsphilosophie*. The question of the *Beseelung* of the All of things ought not, then, even to be asked. No more ought the question of its *truth* to be asked, for truth is a relation inside of the sum total, obtaining between thoughts and something else, and thoughts, as we have seen, can only be contextual things. In these respects the pure experiences of our philosophy are, in themselves considered, so many little absolutes, the philosophy of pure experience being only a move comminuted *Identitätsphilosophie*.

Meanwhile, a pure experience can be postulated with any amount whatever of span or field. If it exert the retrospective and appropriate function on any other piece of experience, the latter thereby enters into its own conscious stream. And in this operation time intervals make no essential difference. After sleeping, my retrospection is as perfect as it is between two successive waking moments of my time. Accordingly if, millions of years later, a similarly retrospective experience should anyhow come to birth, my present thought would form a genuine portion of its long-span conscious life. 'Form a portion,' I say, but not in the sense that the two things could be entitatively or substantively one—they can not, for they are numerically discrete facts—but only in the sense that the *functions* of my present thought, its knowledge, its purpose, its content and 'consciousness,' in short, being inherited, would be continued practically unchanged. Speculations like Fechner's, of an Earth-soul, of wider spans of consciousness enveloping narrower ones throughout the cosmos, are, therefore, philosophically quite in order, provided they distinguish the functional from the entitative point of view, and do not treat the minor consciousness under discussion as a kind of standing material of which the wider ones *consist*.

WILLIAM JAMES.

DISCUSSION

PHENOMENALISM AND THE PROBLEM OF KNOWLEDGE

TO prolong a discussion for the mere setting at rights of one's position were fatuous pains, but a better promise seems to warrant some comment upon the issues raised in the papers¹ of Dr. Montague and Professor Strong in partial bearing upon my own paper upon 'The Concept of Consciousness.' In that paper I aimed at presenting merely a point of view, not at all a metaphysical solution; but it is undoubted that in metaphysics points of view are at least implicit solutions, furnishing at least one's axioms; and, consequently, though the unattempted must remain unattempted, the burden of the issue is not to be evaded.

I

First of all, a matter of epithet. Dr. Montague designates my position 'naïve realism' and Professor Strong (not without reason) objects. As a matter of fact, I could scarcely choose the dubbing, least of all as connoting what Dr. Montague infers. Were 'naïve realism' merely a designation of sincere good faith and a somewhat expansible satisfaction in the reception of experience *en bloc*, I could not demur; but it seems to me that both this term and 'idealism' have become freighted with onerous epistemology; neither usefully names that non-partisan and catholic complacence in mere events which I conceive as the ideal ante-epistemology, and for the definition of which I was feeling in my previous paper.

Certainly it is with some astonishment that I find myself credited by Dr. Montague with a 'telepathic' theory of perception and by Professor Strong with belief in an 'extra-conscious world of *matter*.' So far from harboring either of these notions, or yet from entertaining the epistemological dilemmas which called them forth, I had not conceived myself to be in a position to define either one. My especial concern was, for the nonce, to escape epistemology and consider the possibility of an approach to metaphysic through compliance with the natural urgency of the phenomenal stream rather than by the bridging of what seems to me an artificially delved psychophysical gap. For the moment, I wished to disregard the problem of 'body and mind' in order to consider the more ancient and palpable problem of events in general. To indicate that the origin of interest is the *event*—the moment-to-moment happening which may or may not turn out to be a metaphysical somewhat—I chose the term 'phe-

¹ In Vol. I., Nos. 11, 19 and 20 of this JOURNAL.

nomenalism' as conveniently evasive. From the point of view of an epistemologist, Professor Strong is quite right in terming this a 'lazy phenomenalism.' But surely there is another point of view, that of the ontologist; and it was ontological applications of epistemological interpretations (of consciousness) which I was criticizing, and an ontological predisposition which I was urging as metaphysically natural.

I am far from considering this predisposition to be naïve if by 'naïve' is meant the attitude of the metaphysically unsophisticated. Naïveté, in the sense I urge, is rather a mental achievement, by no means of the easiest after generations of communal thinking and ideal construction. But the difficulty of the mental disrobement is no invalidation of the method, which, even in pursuance of the Cartesian attempt, imperfect as it was, has been richly rewarded.

II

Now, from the point of view assumed, the relation of consciousness to the nervous system is in kind not different from any other relation of phenomena. Provisionally the brain belongs to the same category as the fixed stars, that is to say, the category of things having sensuous insistence, and, granted a hypothetical uniformity in experience, ontological determination of the stars is in some kind ontological determination of the brain; granted uniformity and consistency in nature, our problems must eventually solve themselves.

But uniformity really possesses no *a priori* necessity, and, in fact, in the world of seemings is squarely belied. The one thing we are surest of is our present comprehension of things hurrying to extinction. The isolative experience remains the common one, and consistency and continuity remain ideal. The aspect of unity in science is attained only by disregard of what fails to comport to the chosen gauge, resulting occasionally in most grotesque dissections, as, for example, when consciousness is made a sort of catch-all for unwieldy physical qualities, with the final absurdity that it has swallowed practically all that gives robustiousness to physical reality, while the uniform physical world that is left to us is a world of airy nothings.

Nevertheless, the instinct for uniformities, amounting as it does to a veritable passion of the intelligence, is not without meaning. Provided we always recognize that unities and identities are mental economies, methodological devices, and not *a priori* facts, we are warranted in our hypothesis. Uniformities are schemata rather than realities, and their value lies in the fact that they are keys to experience. Each science, with its selected uniformities, is a key

to a particular field, and metaphysics, as usurping the most general field, is key to them all. Together they form a chart for the broad orientation of our way in life. But the chart is formed by a process of ideal selection, and the fact of selection of what is significant for us from what is not, or does not seem, significant, is no impeachment of the reality of the graceless residue.

With the others, the science of the human organism also is cartographic. Were every conscious event invulnerably paralleled by a brain event (as seems to me wholly credible), still the correlation of the two would not have been carried beyond the cartographer's standpoint. Concomitance is not identity, nor is an idea of a triumphant democracy a delirium of electrons. The office of language is to make distinctions, not to obliterate them. Indeed language, which I take to be nature's analysis of experience, reveals many disjunctions as gaping as that between mind and body.

By no means would I deny that there is uniquely a problem of knowledge. Only it is not primarily a problem of body and mind; that is a conceit which comes later, as a sort of third party's thought. At the start there is merely a heterogeneous experience, from the raw stuff of which there is slowly built up, by ideal or by instinctive selection, a structure which we call our system of knowledge. The problem which thence arises concerns the relation of the order of this construction to the historic order of nature. This problem pertains to a kind of natural logic, and is only to be solved, I imagine, by a sufficient account of the evolution of mind; and no one will be rash enough to say that the disentanglement of its historic from its schematic elements—'real' from 'ideal'—is like to prove an easy task.

III

But conceding, as I do, a unique problem of knowledge for which I am prepared to offer no solution, Professor Strong, who does offer a solution, may very properly require reason for hesitance in accepting it.

The reason he himself fairly shows in the second part of his discussion (No. 20 of this JOURNAL). The distinction there drawn between knowledge properly so-called and the immediacy of real qualities is one which I do not doubt. But, in deducing from this distinction that 'matter' (by which I presume to be meant reality not yet consciously related to the self) is sensation, it seems to me that he does not escape the epistemologist's bias. His conclusion only makes explicit what this bias necessitates—the establishment of an identity between psychical and physical, between mind and body, which language refuses to recognize. In ordinary speech the brain

is not sensation, body is not mind, and ordinary speech represents at least intellectual expediency. Nor does a system which resolves to a mere assertion of the oneness of body and mind heal the gap which its terms presuppose.

For me the significance of the distinction which Professor Strong stresses lies elsewhere. Those real qualities which from our psychological point of view we call sensuous are the basis of what is truly naïve in experience, and presumably of what is properly the substance of the world. In human experience, with its intense specialization, they do not overtly display their ontological character; even in perception, as Professor Strong rightly says, they are mingled with palpable cognitive elements, and these give to our facts their ostensible natures. But it is easy to satisfy oneself of the insecurity of these natures. A fairly concentrated mental effort enables us to alter them at will, and in reviewing the mind's development one readily detects the progressive alteration of nature. Human experience as organized by human knowledge pursues idiosyncratic courses, and its so-called anchorage of fact is its most palpable and partial fiction.

Nevertheless, we are forced to judge and infer from the midst of this experience and on the basis of what it affords. Fortunately it does not leave us destitute. Knowledge—even in perception—is characteristically retrospective. That is to say, it recognizes an order of nature quite distinct from its own; its essence is the affirmation of a history which it schematizes, nor does it pretend to be true to this history except so far as is humanly expedient. The human bias is frankly avowed.

That we can wholly escape the disability which the form of knowledge entails is not to be thought, but certainly its own requirements of consistency and completeness impel us to affirm for those primary qualities which we guessingly recognize in perception other relations than their relations to our thought or feeling of them. The unitary consciousness that thinks and feels is a relatively late product of evolution and can not but concede a reality antedating itself. To reconstruct that reality into a world-order evolving in independence of our thought, is a proper problem of philosophy. In that reconstruction, body and mind would each find proper account, but it is hard to believe that they would be confounded with one another as *things*, after having been first so saliently distinguished by nature, or that they would be separated irrevocably as *qualities* when nature so emphatically unites them in a single experience. The 'psychophysical organism,' like other 'things,' is a highly specialized group of easily distinguishable

attributes and functions, and it would seem to be metaphysically idle to hypothecate but one or two species of reality where nature has so plainly furnished a multitude.

IV

There is one other point to which I would briefly refer. In my previous paper I had endeavored to be explicit in challenging the notion of a brain-enveloped consciousness, and I can only understand Dr. Montague's curious misapprehension of my position, which leads him to credit me with a belief in tentacles of consciousness reaching from the brain to the fixed stars, on the supposition that he is unable to conceive non-spatial experiences, or even non-coordinated spatial experiences. As a matter of common conception, many of our ideas have nothing to do with space, while those that have are not always concerned with the same space. The space which we call real, as opposed to that which we denominate ideal, is quite plainly the outgrowth of processes of selection, and it is by no means evident that its reality is not to a large extent a fiat creation. In fine, even on the hypothesis of a noumenal space there is no insistent reason for locating consciousness within it, while from a Kantian point of view this would be patently absurd.

But Professor Strong has so admirably answered Dr. Montague's misapprehension (in No. 19, page 520) that I need not dwell upon it here. There is, however, one point in which both Dr. Montague and Professor Strong find an especial cogency—the matter of time, disparity between an event and its perception—and to this I would briefly revert.

The gist of the difficulty lies, I take it, in a failure to recognize the retrospective reference of perception. We recognize the object perceived as the cause of the perception of it, thus by the very nature of causality assigning it to the historical rather than to the cognitive order of events. This does not necessitate that the sensuous element in the perception—the flare of the dying star—itself become symbolical; as a matter of fact, this symbolizes nothing. But the perception, besides the sensation, includes that which makes it perception, and that in turn includes a direct sensible inference of the existence in time of the object perceived. The temporal lapse we recognize as temporal continuity, or, in other words, we perceive time.

If we ask what, in a metaphysical sense, is the cause of a perception, we must acknowledge that, very possibly, it may be different from what it is perceived to be; that is, our perceptual inferences are liable to error. But it is absurd to pretend that a cause is not actually perceived. When we analyze or when we experimentally

enlarge the range of our perceptions, we may expand the cause beyond our original perception; we may add inference to inference, and include, for example, the body and its perceptive mechanism, or even inter-stellar happenings. In doing this, we interlard real qualities with ideal constructions, hereditary as well as individual, instinctive as well as rational, and, the chances are, eventually choose as the sole normal node of reference for reality its sensuous aspect, that is, its relation to perceptual consciousness.

But, even supposing the necessity of this choice, we may still urge that events are perceived as temporal in precisely the same sense in which they are perceived as spatial. I agree wholly with Professor Strong that the continuity of the world-order as a whole—whether temporal, spatial, or causal—is not directly conveyed in experience. But minor continuities are so conveyed, and our most ordinary life comports itself to the assurances which these continuities afford.

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REVIEWS AND ABSTRACTS OF LITERATURE

A System of Metaphysics. GEORGE STUART FULLERTON. New York, The Macmillan Co., 1904. Pp. x + 627.

'Back to Berkeley' is the suggestion which comes to the reader of Professor Fullerton's work from more than one aspect of the treatment. Indeed, the author himself often calls attention to the points of similarity between his doctrine and that of Berkeley. The theory of space, the relation between visual and tactual sensations, the almost complete ignoring of elements other than sensory, and lastly, a point which is decidedly in the author's favor, a lucid and trenchant style, all remind the reader of the brilliant writer of two centuries ago. In yet another respect the present treatise recalls Berkeley. Metaphysics for Professor Fullerton means almost precisely what it meant for Berkeley—chiefly a theory of knowledge, with some incidental treatment of the relation of mind to mind, and with a theistic outcome. Professor Fullerton has an extended discussion of the relation of mind and matter, but otherwise there is close agreement as to the scope and method. There is in Professor Fullerton's system little or no reference to conceptions of the universe, except under the categories of mechanism and teleology. There is no mention of the general conception of evolution. There is little or no effort to consider the nature of reality, except from the standpoint of the problem of knowledge. There is no effort to relate the moral or esthetic aspects of reality to its other aspects; so that if we were to take the title, 'A System of Metaphysics,' literally, it would leave out much which might reasonably be considered in a treatment of ultimate reality. Doubtless, however, an author has a right to write a book upon the sub-

ject which interests him, and if he pleases to call it 'A System of Metaphysics,' it may be said that the term has no such well-defined usage as would prevent him from so naming it.

The main interest of the work lies in the author's views as to the self, the external world, and the relation between the two. There is a brief chapter on the will, and two on God, but, as these topics seem to interest the author chiefly as an opportunity for the criticism of other theories, they may be omitted from this notice.

The view which the author presents of the external world, as he himself states, suggests the doctrine of Berkeley, Hume and Mill. Its main difference is its effort to avoid their psychological standpoint. 'The psychologist distinguishes between his consciousness of the real world and a real world which he assumes to lie beyond it' (p. 193). The key to the author's position is found in the conception of the symbol. The 'real,' 'external' world must be a world of which we are conscious, and therefore in a sense must be in consciousness. At the same time, it is evidently not identical with any particular intuition; for in any object regarded as real, there are parts or qualities not actually sensed at the moment, and perhaps, like the other side of the moon, never actually perceived. The real external world is thus a compound of sensational and imaginary elements. This 'is represented or symbolized in any specific consciousness by elements which must be in part, though not wholly, identical with the elements symbolized.' If we ask more specifically what kind of sensations belong to the real world and what to the symbol in consciousness, we are given an answer based in the first instance on Locke and Berkeley: the secondary qualities are subjective; visual sensations are signs of touch sensations. Sensations of touch and movement are capable of accurate measurement, 'fall into an interrelated system which is capable of accurate description, and, through their relations to which, sensations of other classes may be given that orderly arrangement which constitutes the difference between a chaos and a world.' The tactual world 'is what we mean by the objective; other elements of our experience are by contrast subjective' (p. 154). This distinction is further illustrated by space. 'All space is tactual space. Colors do not occupy the same place as the tactual things to which they belong. They do not occupy space at all, nor do sounds or tastes or odors.'

When now we come to the analysis of space, the aim is to distinguish between the space of intuition and 'real space.' The latter has the qualities which Kant attributed to space, viz., it is infinitely divisible, and is a single whole. On the contrary, the space of intuition is not infinitely divisible although it is composite. To reach a space to which mathematics will apply, with its lines which are always lines and not simple points, we substitute for the specific space of intuition a tactual space. But this is only a temporary resting-place, and we must substitute for this the space of 'real' things as conceived by science. Nor is this permanent: "Every reality in which we may rest at any time is, thus, a relative reality, and its space is relatively real. The absolute object

and its absolute space are not *an* object (intuitive) and *a* space (the 'form' of an intuition), but rather an indefinite series of substitutions gathered up and hypostatized into an individual. It is to this absolute object and its absolute space that the mathematical conceptions apply in all their rigor" (p. 191). 'The real world in space and time, is then, a vast complex of tactual things standing to each other in certain relations of distance and direction, and passing through a system of changes.'

So much for the real world. What of the mind? The mind is for Professor Fullerton only a word for the 'totality of mental phenomena,' or 'a particular group of experiences.' Indeed, there seems little justification for using a noun in the singular when speaking of experiences which are referred to the 'subjective order.' The sort of experiences which are usually cited as evidence that there is something not included within the material world, are 'sounds, odors, colors, tastes.' Whether by accident or by choice, the processes of thinking and willing are not emphasized in forming the conception of the mental. Perhaps the author does not care to emphasize processes which seem to evidence unity and activity, for his satire is never keener nor his satisfaction more evident than in his derision of the doctrine of a self or knower, in distinction from the elements of consciousness,—elements of sensation and idea, of material and form. The Kantian or Neo-Kantian 'synthetic activity,' and the 'atomic self' of the 'plain man' are equally in contempt. A historical and psychological explanation is offered for the fact that certain thinkers have maintained the doctrine of a synthetic activity. It is a survival of the 'faculty' psychology: 'consciousness is complex; what can better synthesize than a synthetic activity?' (484). There is no theoretical justification for the assumption of any such activity, either outside of experience or within experience.

It might perhaps be supposed that in recognizing 'form' as one of the elements of consciousness, Professor Fullerton is doing justice to all that Kant really demonstrated as a non-sensational element in experience. If, however, Professor Fullerton intended to include in his analysis of consciousness anything corresponding to the *organization* of content, or anything which would imply that a self was shaping its content in accordance with needs or ends or categories of its own, he has certainly not made this prominent. He occasionally uses such words as 'conception,' speaks of the external world as a 'construct,' and in one passage which, so far as I have noticed, is unique, he actually speaks of what might be regarded as a constructive activity of consciousness in forming a geometrical conception of a line and point (p. 191). But if there is any active functioning of the intelligence assumed in the system, it is referred to incidentally, and not made a constitutive element in building up experience. The whole theory, in fact, is a theory of content. There is no important use of conceptions of function or activity or organization.

This applies as well to the theory of the external world. The differ-

ence between the subjective and the objective is found in the difference between the symbol and the symbolized, between the visual and the tactual. It is unnecessary to say that those who think that Kant contributed a new insight to the analysis of experience believe that, in the real world of objective things, the conception of permanence and the conception of causality, which are important elements in that very objective order of which Professor Fullerton speaks, can not be properly brought under the conception of sensation. If now Professor Fullerton replies that to allege any organizing activity in consciousness is to fall back upon the old faculty psychology, it is easy to retort that his own favorite expression, 'consciousness is complex,' carries with it as objectionable implications of a different sort. If space permitted, it would be easy to amuse the reader by replacing Professor Fullerton's ridicule of the literal, physical meaning of synthesis, given on page 481, with equally senseless ridicule of applying the term complex to the mind in a literal sense. How, it might be asked, can consciousness be 'folded together'? The real point of the matter is, of course, not in names, but in the general conception of experience which our names indicate; and my understanding is that Professor Fullerton, like Berkeley, would characterize all our experience in the general manner indicated by the term *sensational*, rather than in a manner indicated by the conception of *organization*. Berkeley, to be sure, believed in a self, but he gave it no function in the organization of experience. Professor Fullerton's construction of experience involves memory and imagination, but, with the exception of incidental hints, seems to involve nothing more.

But whatever may be one's view as to the necessity of a synthetic unity for knowledge, a more fundamental question of method is suggested. Is it good metaphysics to discuss the unity of the self—to say nothing of the immortality of the soul and the existence of God—from the cognitive aspect only? Action according to a purpose is certainly a phase of consciousness that should be reckoned with here. The facts of agency and responsibility have had a large share in the historical origin of the conception. They should still be considered, at least, in discussing the worth of the conception.

In the treatment of the relation between mind and body there is much acute criticism of both inter-actionistic and parallelistic theories. It is held that both involve a conception of mind and body as separate entities. Both attempt explanation by classification of the relation in question with what is really a material analogy. Nevertheless the author prefers the parallelistic point of view. In anticipation of the objection that parallelism explains nothing, he insists that 'we have no right to ask that the relation of mind and body be explained, in the usual sense of the term' (i. e., by classing it with other relations). 'The relation of mind and body is unique.' Probably all would grant the uniqueness of this relation, but it is not especially illuminating to stop with this statement. It reads better as a first word than as a last word. If it is premature to ask for an 'explanation' of the origin of consciousness, of

the significance of consciousness in evolution, of the process called control, it would at least not seem unreasonable to ask for some attempt to investigate in these directions. The 'plain man' is indeed reassuringly told that he may continue to say that certain changes in the physical world take place because a certain man formed a plan—provided he means only that there has been a constant relation between plan and accomplishment. But I for one should have been glad to have some suggestions toward a way of thinking consciousness and the physical world in view of these facts.

With regard to the discussions on space, it seems to me that the criticisms of the Kantian view misinterpret the implications of the phrase 'infinitely divisible.' To hold that a finite line, which is infinitely divisible, can be traversed, does not involve the doctrine that one must complete an infinite series in order to traverse it. The doctrine of infinite divisibility implies that if you proceed along a series, in which the law is that each successive term is half the preceding, you can never reach the limit *in that way*. This, however, does not mean that to pass over any space you must do it according to that law. Of course, too, the mathematical interpretation of his spinning top would be, that if the speed were increased the time of the revolution would approach nearer and nearer to zero as its limit; it would never reach that limit. While Professor Fullerton was inserting these puzzles, he might in consistency have further edified the reader by quoting one of the consequences of Berkeley's theory which that author himself was acute enough to discover, viz., that an isosceles right-angled triangle can not be drawn. For if a line is composed of a definite number of points, then the hypotenuse of such a triangle would have to be composed of a number of points equal to the square root of two, which is not an exact number.

In writing this notice I have sought to point out the chief features in the standpoint which seem to me to challenge attention. I have not thought it necessary to dwell on the acuteness, the brilliancy and the force with which Professor Fullerton has urged his views. These will be anticipated by those who are acquainted with his writing, and will be recognized by the reader. I can but feel, however, a decided regret that the author did not see fit to take up more directly the problems suggested to the thinker of to-day by natural science and history, and to push forward the boundary of our thinking along these lines.

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Analysis of 'Localization,' Illustrated by a Brown-Séquard Case. C. SPEARMAN. *British Journal of Psychology*, Vol. I., No. 3, pp. 286-314.

The main contention of this paper is in the direction of a vigorous protest against the dictum of Förster, that tactile localizing power is completely dependent upon the efficiency of movement-sensations. The occasion for the present analysis was afforded by a Brown-Séquard case under treatment in the Leipzig nerve hospital about a year ago. Upon admission to the hospital the condition of the patient was as follows: The

movements of the *left* leg were atactic, and all sense of its position was lost. Tactile sensibility on this leg was diminished but not destroyed. The movements of the *right* leg were only slightly atactic, and the perception of position was normal. The tactile sensibility of this leg was almost completely destroyed. After the removal of a knife-point which, in a stabbing fray twenty-six years before, had been broken off at the left of the sixth dorsal vertebra, the patient began a slow but steady improvement. The operation was performed in October, 1903. For four months, beginning with the following May, the patient was under examination by the writer, and about 3,800 careful tests were made.

As a preliminary to the spatial tests, an exact quantitative determination was made of the sensibility to movement and to contact on the two legs. The general state of these matters has already been noted. In the course of the experiments it was found that fatigue diminished the movement sensibility of the left leg only and the tactile sensibility of the right leg mainly.

The capacity to localize cutaneous impressions on the legs was then subjected to a detailed examination. Three methods of procedure were used: the 'simple,' where, after the manner of Henri, sight and contact were excluded; and those of Weber and Volkmann, termed 'groping' and 'looking,' respectively. The three methods gave diverse results. By the 'simple' method the left leg (insensible to movement) showed the greater inability to localize contacts. But by the other two methods this same left leg displayed the greater localizing capacity. In all three cases fatigue produced no appreciable change. It is significant to note in connection with this last fact that it was only in the state of fatigue that the compass test showed any very marked derivations from the normal on most of the regions explored. In fatigue, however, all power to discriminate the two points, whether simultaneously or successively applied, was lost.

The attempt to interpret these seemingly conflicting results forces the author to make a fresh critical analysis of the various localizing processes. With the general features of this analysis most psychologists would, I fancy, be in substantial agreement. Special interest attaches to the discussion of the 'simple' localization. How does a finger-tip come to point with any degree of accuracy at a stimulated point on a lower limb? It would seem that one must first know just where in surrounding space this stimulated part of the limb is. This information can not, however, be given by 'positional' sensations, for there are no such sensations. Nor, on the other hand, can introspection find any movement-sensations finely enough graded to serve as accurate indications of a limb's position, not to mention the fact that, if they did exist, the localizer would have to collect and interpret all the messages from the joints in the entire circuit from the finger-tip to the excited spot—a process not to be discovered in consciousness. The writer is therefore forced to assume that the arousal of perceptions of position is accomplished by the mechanical summation, without accompanying consciousness, of neural excitations caused by movement,—proceeding possibly from the corpuscles of Vater,—the result

alone reaching consciousness under the form of a definite spatial perception. Derangement of this purely physiological mechanism is responsible for the impairment of localization as well as for definite illusions such as allocheiria, the excitations either failing to reach the cortex, or arousing a wrong cortical area, and thus evoking an erroneous spatial image.

On this view loss of sensibility to movement, and loss of power to localize tactual impressions, may, to be sure, be coincident, but they are not causally related. The lesion that impairs one function may or may not impair the other also. The improvement in localizing under the methods of 'groping' and 'looking' is due, the author holds, to the aid of the associated spatial images which are aroused in addition to the pure 'thereness' of the 'simple' method.

The contention which the author is chiefly interested in supporting seems to be well maintained. The merits of the paper lie in the presentation of trustworthy experimental data, and in the clear and comprehensive analyses, a genuine contribution being made to both fact and theory. We are thus helped to advance a little in this puzzling field of tactual localization. It seems a great pity, however, that the patient himself could not have been made to contribute to the matter by his own introspections. If such were gleaned, they are not revealed to us. The analyses of the localizing process refer to the normal individual. But as welcome and as badly needed as these are, we have still greater need of analyses made by one in whom the localizing functions are deranged. Must we wait for a Brown-Séquard case in the person of a professed psychologist before our needs are satisfied?

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A Comparison of Some Mental and Physical Tests in their Application to Epileptic and Normal Subjects. W. G. SMITH. *British Journal of Psychology*, January, 1905. Vol. I., No. 2, pp. 240-261.

Six normal individuals (attendants in an asylum), five epileptics whose general intelligence was not notably impaired, and five epileptics showing marked dementia were tested with respect to power of recognition, immediate memory, simple and choice reaction time, discrimination of length, rapidity of movement, tremor, rhythm and strength of grip. In discrimination of length, rapidity of movement, tremor, rhythm and strength of grip there was no apparent difference between the groups. No demonstrable differences were found in the influence of practice, though the normal individuals seem to improve slightly more. In recognition, memory and reaction time the epileptics are inferior; the essential facts being as follows:

	RECOGNITION.							
	PICTURES.				WORDS.			
	Forgetting. av.	Confusion. m.v.	Forgetting. av.	Confusion. m.v.	Forgetting. av.	Confusion. m.v.	Forgetting. av.	Confusion. m.v.
Normal	1.2	0.5	0.8	0.4	1.7	0.6	0.8	0.5
I. Epileptic (nearly normal)	1.3	0.7	0.7	0.5	2.1	0.8	1.9	1.3
II. Epileptic (demented)	1.7	1.0	2.5	1.2	2.2	1.2	3.3	1.3

	IMMEDIATE MEMORY.		LETTERS RIGHTLY PLACED.			
	Series of 4 Letters.	5	6	7	9	
Normal	3.9	4.8	4.9	4.9	4.6	
I. and II. Epileptic	3.6	4.1	3.8	3.8	3.0	

	REACTIONS		Simple (throwing cards in a heap)	
	'Choice.			
	av.	m.v.	av.	m.v.
Normal	17.	1.6	8.3	0.6
I. Epileptic	23.6	2.7	11.0	1.0
II. Epileptic	32.0	3.0	13.6	1.2

It seems likely that the choice reaction time or, still better, the difference between an individual's simple and choice reaction time may have diagnostic value. Unfortunately Mr. Smith does not give the individual records or explain clearly whether the m.v.'s are (1) the averages of the mean deviations of individual's separate trials from their averages, or (2) the averages of the deviations of the averages of individuals from the average of the whole group. Apparently his m.v.'s are the former, though to estimate the reliability of his results and to estimate the diagnostic value of the tests the latter are essential.

Such work as this is very much needed, not only for obvious practical reasons, but also because, as Mr. Smith says of his negative results, it 'forces on our attention the richness and complexity of mental life.' All workers in individual psychology should, however, make it an absolute rule to print the individual measurements except when the expense is prohibitive.

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Applied Axioms. ALFRED SIDGWICK. *Mind*, January, 1905, pp. 42-57.

"As an excuse for writing on so ancient a subject as the respect which is properly due to 'undeniable truth,' a modern instance will be useful as showing that, in spite of the antiquity of the problem, its solution is still a little obscure." The 'modern instance' which furnishes the supposedly necessary justification for this article is Dr. McTaggart's contention (in *Studies in Hegelian Dialectic*, pp. 110-113) that we must either abide by the law of contradiction in all cases or else assume that sensation apart from thought can assure us of reality. As against this argument, Mr. Sidgwick, who adopts the position of pragmatism, maintains that a contradiction may result from the unavoidable defects of language and of thought, in so far as thought depends upon antithesis; and consequently "that the actuality of anything must be judged on other grounds than that of our power of explaining its nature in words; and that, where we are compelled for all practical purposes to recognize that a thing or a process is actual, no verbal argument to show that it is impossible has any standing-ground." The easy dilemma by which McTaggart demolishes this position overlooks the essential distinction 'between an undeniable law and an undeniable major premise (or use of an undeniable law).' Stated abstractly, the law of contradiction is a law the truth of which no one would find it worth his while seriously to doubt.

In concrete cases, however, it is always possible that the proposition, *A* is *B*, while literally true, may be virtually untrue, owing to the neglect of some important aspect or detail. Rigid insistence upon the law, therefore, becomes a positive source of error, for it withdraws attention from possible ambiguities in the predicate, and it results in the hasty condemnation as illusory of such notions as causation and change, which have most abundantly proved their practical value. Mathematical axioms are no exception. "Behind an inference resting on an appeal to arithmetical principles there is always implied the saving clause 'so far as these are numbers'—which includes both the proviso 'if I have counted as I intended' (*i. e.*, correctly), and the proviso 'if the laws of number are applicable to the subject.'"

Stated briefly, the point of the article is that the law of contradiction is trustworthy only when we are able to assure ourselves that the premises in the given case have been stated correctly. For such correctness the law itself of course furnishes no guarantee. This much is fairly obvious. As a plea for an arrest of judgment until further data are secured the argument may often be quite in place. But whether we can pass directly from this to the conclusion apparently intended, that practical considerations may justify us in entertaining opinions which are in open conflict with our reasoned results—that is indeed another question, and one for which the author advances no proof.

B. H. BODE.

UNIVERSITY OF WISCONSIN.

JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. Band 125, Heft 1. *Das Verhältnis des Fühlens, des Begehrens und des Wollens zum Vorstellung und Bewusstsein* (pp. 113-163): J. BERGMANN.—The ego that finds within itself feeling, etc., is a unity such that two objectively distinct and particular properties can be united in it only if two other properties standing to them in the relation of universal to particular, and also reciprocally conditioning each other in that though objectively distinct they are subjectively identical, are such that, were one of them only present in the ego, that ego would be the universal for which the two first named properties would both be particulars. No one can have ideas without perception of self. Every feeling has an idea for a substrate, and every idea, a feeling. To free intensity from its contradictions we must say that intensive properties no more tend to disappear with decrease of intensity than do tones with the lowering of pitch. The contrast of positive and negative applies to feelings. *Zur geschichtlichen Bedeutung der naturphilosophie Spinozas* (pp. 163-186): A. HOFFMANN.—Spinoza was far more truly a successor of Hobbes than of Descartes, both as regards the use of the geometrical method, and as to emphasis on social philosophy, the relation of body and mind, free will, and the differences between human and other souls. *Bericht über die italienische philosophische Lit-*

teratur des Jahrens 1902 (pp. 186-202): C. D. PFLAUM. *Recensionen*. R. Falckenberg, *Hermann Lotze. I: Das Leben und die Entstehung der Schriften*: M. WENTSCHER. E. Meumann, *Die Entstehung der ersten Wortbedeutung beim Kinde*: M. ISSERLIN. R. Eisler, *Studien zur Werttheorie*: J. K. KREIBIG. A. Dryoff, *Über den Existenzialbegriff*: v. ASTER. *Notizen. Neu eingegangene Bücher. Aus Zeitschriften.*

Elkin, W. B. *Hume: The Relation of the Treatise of Human Nature-Book 1 to the Inquiry Concerning Human Understanding*. New York: The Macmillan Co. 1904. 8vo. Pp. ix + 330.

Hibben, John Grier. *Logic, Deductive and Inductive*. New York: Charles Scribner's Sons. 1905. 8vo. Pp. xvi + 439. \$1.40.

Santayana, George. *The Life of Reason or the Phases of Human Progress*. New York: Charles Scribner's Sons. 1905.

Vol. I. *Reason in Common Sense*. 12mo. Pp. x + 291. \$1.25.

Vol. II. *Reason in Society*. 12mo. Pp. viii + 205. \$1.25.

Yale Psychological Studies. Edited by Charles H. Judd. *Psychological Review, Monograph Supplement*. No. 29. The number contains the following articles: 'Introduction to a Series of Studies of Eye Movements by Means of Kinetoscopic Photographs,' by Charles H. Judd, Cloyd McAllister and W. M. Steele. 'The Fixation of Points in the Visual Field,' by Cloyd N. McAllister. 'The Muller-Lyer Illusion,' by Charles H. Judd. 'The Poggendorff Illusion,' by E. H. Cameron and W. M. Steele. 'The Zollner Illusion,' by Charles H. Judd and Henry C. Courten. 'Analysis of Reaction Movements,' by Charles H. Judd, Cloyd N. McAllister and W. M. Steele. 'Practice without Knowledge of Results,' by Charles H. Judd. 'Movements and Consciousness,' by Charles H. Judd.

NOTES AND NEWS

COLUMBIA UNIVERSITY has received \$100,000 from Mr. Jacob H. Schiff to endow a chair of social work, and the new professorship has been filled by the appointment of Dr. Edward T. Devine, general secretary of the Charity Organization Society, director of the School of Philanthropy and editor of *Charities*. This endowment makes possible the close affiliation between the School of Philanthropy and Columbia University.

THE first Herbert Spencer lecture, established by Pandit Shyamáji Krishnavarma, M.A., of Balliol College, was given at Oxford, on March 9, by Mr. Frederic Harrison, M.A., honorary fellow of Wadham College.

MR. SHYAMÁJI KRISHNAVARMAN has offered to establish six traveling fellowships at Oxford, five of them to be called the Herbert Spencer Indian fellowships. The fellowships are intended for natives of India.

DR. R. S. WOODWORTH, instructor in psychology in Columbia University, has been promoted to an adjunct professorship.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

KANT'S DOCTRINE OF THE BASIS OF MATHEMATICS¹

THE treatment of the philosophy of mathematics by Kant, in the 'Critique' and in the 'Prolegomena,' is equally characteristic of his philosophy in general, and of the age in which he did his work. The age in question was one of a rapid development in certain relatively advanced regions of mathematical research. But it was also an age of disillusionment regarding the power of mathematical science to demonstrate metaphysical truth. It was furthermore a time when mathematical inventiveness was decidedly more noticeable than mathematical rigor; and when construction had for the moment outrun logical reflection in mathematics. On the other hand, it was a time when the philosophers had learned many lessons concerning the importance of experience for their own constructions. Consequently it was a period when mathematics and philosophy were further apart, in spirit and in interest, than they had been during a portion of the seventeenth century. The mathematicians were in a sense more disposed to novel speculation and researches. The philosophers were less confident of the success of *a priori* constructions. Since the death of Leibnitz no thorough-going effort towards a philosophy of mathematics had been made. The efforts of Leibnitz himself regarding this topic were very imperfectly known in the age when Kant wrote. In brief, it was a moment when a sharp sundering of the task of the mathematician and of the philosopher appeared especially called for. That a critical philosopher should lay stress upon the contrast was, therefore, extremely natural. Even as a rationalist Kant had to feel that reason in philosophy had other offices than it had in mathematics. And the mathematicians of the time were too little possessed of an insight into the philosophy of their own science to give him any aid in bridging the chasm that seemed to him to divide the two kinds of activity. Furthermore, the way in which his own critical thought came to him, namely, through the reflections which first culminated in the year 1769, was a way which served to emphasize the contrast be-

¹ Read at the meeting of the American Philosophical Association, Philadelphia, December 28-30, 1904.

tween mathematical and philosophical truth. The discovery of the essay of 1769, on 'The Reason for the Distinction between Regions in Space,' was such as very soon to lead Kant to the conclusion which characterizes the dissertation of 1770, namely, to the conclusion that space and time predetermine the form of the phenomenal world of our percepts, but do not throw any light upon the ultimate nature of things. When Kant passed from the doctrine of the dissertation to the later deduction of the categories, he indeed learned to abandon all methods of obtaining knowledge of the noumena; but the failure to win this knowledge did not bring philosophy any nearer again to the position of mathematics. The business of philosophy remains for Kant the criticism of fundamental concepts, and the determination of their range of validity. The business of mathematics he conceived as the construction of those objects whose laws are determined by the forms of our perceptual faculty. This contrast of the two is henceforth, therefore, absolute. Philosophy, as the *Methodenlehre* of the 'Critique' explains to us, possesses no axiom of a theoretical character, and can justify its concepts only by an explicit proof of their necessity as the conditions of a possible experience. Philosophy, therefore, can never construct its objects of synthetic knowledge. Such objects, constructed and presented by the mind for itself and to itself, are the topics of mathematical science alone. The certainty of mathematical science depends entirely upon the necessity which for us our forms of perception possess. Kant never falters in his assurance that these, our forms of perception, are determinate, are finished, are for us absolutely predetermined by our constitution. In the 'Prolegomena' he triumphantly shows how the possibility of an exact knowledge of mathematical truth is explicable upon his theory and not upon any other. In emphasizing the contrast between mathematical and philosophical method, he expressly does so on the ground that no form of pure thinking can ever present to the mind an object, or can ever demonstrate the properties of this object otherwise than by a mere analysis of a previously given concept. And Kant always confidently speaks as if mere analysis must necessarily lead to comparatively barren and unprogressive scientific procedure. By pure thought I can discover that man is rational, only in case my definition of man has already included rationality amongst the marks which are to be characteristic of man. If mathematical science is able to know objects *a priori* and in ways which are both synthetic and instructive, that must be because mathematical science depends upon something quite different from pure thinking. As this something is *a priori* and necessary, it can only be, in Kant's opinion, a form of perception, and our power to construct objects in accord-

ance with this form. So much, then, for the view of mathematics which Kant took.

The development of mathematical science since the time of Kant has followed a path which his influence has no doubt affected, but whose direction he was entirely unable to foresee. The mathematicians of Kant's time did indeed make unhesitating use of generalizations derived from the observations of objects constructed in space; and they made this use in a way which rigorous mathematicians no longer regard as justifiable. The mathematicians since the time of Kant have tended more and more to follow the very direction which he would have warned them not to follow. Namely, they have, on the whole, increasingly forsaken the method of trusting to perceptual construction as a means of mathematical demonstration. Geometry without diagrams is now the order of the day amongst the most rigorous students of the bases of geometry. Where diagrams are introduced, the reader is especially warned (as in Hilbert's recent lectures on the foundations of geometry, autographed for his hearers)—the reader is expressly warned, I say, to take as it were no logical notice of the diagrams, to regard them merely as hints, illustrations, suggestions of a relational structure whose consequences are to be developed without any use of the perceived properties of diagrams. In this sense it would seem as if the ideal of modern mathematics were the ideal of a science of pure concepts—the very ideal that Kant expressly declared to be impossible for mathematical science. Kant warned the philosophers that they must not attempt to use the methods of mathematics, just because they could not construct their concepts *a priori*. The modern mathematician is warned that he must not put his trust in the properties of visible figures, just because the ideal of his science, the ideal of the search for necessary conclusions, is an ideal which perceptual intuition rather confuses than directly furthers. As Kant interprets the business of mathematics, the mathematician has seen, and therefore believes. He believes because he has seen *a priori*. The modern logicians of mathematics would rather seem to say, Blessed is he who has not seen, in Kant's sense of the *reine Anschauung*, but has yet learned rationally to believe; for he alone has learned with true rigidity to grasp the meaning of his fundamental concepts.

As an incident of this whole development of modern mathematical logic there have appeared various doctrines concerning the bases of geometry which appear to be remote enough from those which Kant explicitly recognized. The tridimensionality of space is for Kant a result of the *a priori* form of intuition. The modern geometer would in general admit that we can indeed see no con-

ceptual reason why space must be limited to three dimensions. But instead of saying like Kant, that the limitation of space to three dimensions is something *a priori*, necessary and certain, the modern geometer would regard this limitation as something which, from the point of view of pure mathematics, is not necessary at all. The properties of a tridimensional space can be, with sufficient definition of the other properties of space, rationally developed. But the form of a tridimensional space is, logically speaking, only one of countless possible forms, whose logically definable properties are precisely as justified a topic of pure mathematics as are the properties of the space of our ordinary geometry. If you reply that tridimensional space is alone worthy to be called space, because that is the only kind of space that we happen to have, then the modern mathematician replies that this limitation may be as important as you please for philosophy, but is an empirical limitation, which makes tridimensional geometry of great importance for applied mathematics, but which, just because of the limitation, has nothing whatever that is mathematically necessary about it. In brief, show me a form of intuition of the Kantian type—so the modern logician of mathematics might say,—and if I accepted your account of it, I should regard it merely as a character belonging to a specifically defined human experience, a character which for that very reason would have no sort of mathematical necessity about it, and, therefore, no authority which need limit in the least mathematical generalizations which may be suggested by this form, but which may vary from it in any given way.

So much for tridimensionality. But of decidedly greater importance for modern theoretical geometry than the merely formal possibility of doing away with the limitation of geometry to three dimensions is that study of geometrical implications, necessities, and possibilities which has appeared in connection with the non-Euclidean geometry, and which still continues, in the form of constantly new additions to our present list of possible geometries. The geometry which Euclid found it convenient to work out explained the relations present in a large number of observable diagrams, by means of certain simple principles. As a fact, this explanation of the observed phenomena by the assumed principle was, in Euclid's case, incomplete, since there are demonstrations in Euclid which do not follow from the axioms alone, but which depend upon the observation of special diagrams. The modern geometer regards such demonstrations as unsatisfactory, just because they make use of principles which the diagram more or less unconsciously suggests, and which the Greek geometer did not make explicit in his list of axioms and postulates. In other words, that very use of intuition

which Kant regarded as geometrically ideal, the modern geometer regards as scientifically defective, because surreptitious. No mathematical exactness without explicit proof from assumed principles—such is the motto of the modern geometer. But suppose the reasoning of Euclid purified of this comparatively surreptitious appeal to intuition. Suppose that the principles of geometry are made quite explicit at the outset of the treatise, as Pieri and Hilbert or Professor Halstead or Dr. Veblen makes his principles explicit in his recent treatment of geometry. Then, indeed, geometry becomes for the modern mathematician a purely rational science, so far as any one special form of geometry is concerned. But here-upon a question of great philosophical interest becomes only all the more insistent. Any one form of geometry, such, for instance, as the Euclidean geometry, depends upon assuming the simultaneous truth of a number of distinct fundamental principles. It is possible to show, and in recent mathematical treatises it has been distinctly shown, that such principles can be so stated as to be logically quite independent of one another, so that no one of them could be deduced from the others. A system of objects which should conform to some of these principles and not to the others is therefore perfectly definable, is mathematically possible. This has been indubitably shown in case of the system of principles assumed by Euclid, and is all the more obvious when to Euclid's explicit principles are added such statements as make explicit the meaning of those principles which, guided by surreptitious appeals to intuition, he more or less unconsciously assumed. Under these circumstances, that very indifference to what we perceptually find present in this or in that diagram, that indifference, I say, which modern mathematical method encourages makes all the more inevitable the question: What necessity is there of assuming precisely that system of mutually independent first principles which Euclid found it convenient to assume, and which, with some supplements, the modern expositors of Euclidean geometry employ? Since it is demonstrable that no sort of logical inconsistency would be involved in supposing the existence of systems of objects which satisfy some of these principles and not others, whence, if from anywhere, is derived the authority of this particular system? As is well known, the modern logicians of mathematics differ a good deal in the theories of knowledge which they use in their answer to this question. But it may be said that very few students of the logic of mathematics at the present time can see any warrant in the analysis of geometrical truth for regarding just the Euclidean system of principles as possessing any discoverable necessity. The facts of the world of experience seem to be economically describable, so many say, in the terms of Euclidean

geometry. But in this sense Euclidean geometry differs in no whit from the concepts of the theory of energy. Mathematical necessity belongs to the deductions from the principles, and to them only. For those who take this view a considerable range of difference of opinion still remains open, regarding the sense in which this convenience of Euclidean geometry as a means of describing the world is forced upon us by experience. Some are disposed to say, No other system of geometry seems to be probably applicable to our physical world. Some would insist that, for reasons upon which I need not here dwell, the known phenomena might be characterized in non-Euclidean terms, if only we could agree to accept certain conventions which actually run counter to our present mental habits. There are some mathematical logicians who are disposed to accept the Kantian view far enough to admit that the Euclidean space form is the expression of what we men, so long as we remain true to our present perceptual nature, must needs find the most natural way of interpreting spatial experience. But about one matter nearly all the modern students who approach the subject without a distinct pre-existing Kantian bias are agreed, namely, that whatever necessity belongs to Euclidean geometry, apart from the necessity of its deductions, is in no sense mathematical necessity, any more than the present necessity that bitter tastes, if sufficiently strong, should be disagreeable is a mathematical necessity. With this view I myself agree. It determines our judgment as to the positive value of Kant's view of the basis of mathematics. For mathematics, from the modern point of view, is *concerned with necessary inferences*. If the field within which necessary inference is itself a possible matter is in any way a restricted field, that is, if there are some subjects that admit of systematic mathematical treatment, while other subjects altogether forbid such treatment, then the field within which systems of exact mathematical inference are possible is determined by the categories of thought, and not by the forms of any intuition. The ideal of mathematical science is the exact development of the consequences of all those ideal forms which it is possible to subject to exact treatment at all.

Thus, if the *ego* has a determinate relational structure, and if this relational structure admits of mathematical treatment, then, and just in so far, the science of the *ego* will become a branch of mathematics. What will make it so, if at all, will not be the necessity under which we now stand of appreciating the presence of the *ego*, but the capacity which our concepts of the *ego* may possess of development in terms of a precisely definable system of relationships. In the same way, if our spatial experience presents a character which admits, as it does, of precise relational definition and development,

then we shall have, as we have, a mathematical geometry. But the mathematical necessity of this geometry will belong solely to the field where the exact development of the relational structure of the ideal entity called, for instance, Euclidean space, is possible. Mathematical necessity will in no wise be possessed by this entity itself as distinct from any other entity (say a non-Euclidean space), which can be treated with equal exactness. God may have made our space-perceiving nature on the lines of Euclid's geometry. If he did, that is a matter of experience, not of mathematical necessity.

If your boots have a relationally exact structure, there may be a mathematical science of this structure, precisely so far as the relations in question are exact. But it will be no part of mathematical science to determine whether or why you have any boots at all. If you insist that the form of your boots is determined *a priori* by the form of your feet (a proposition which may be regarded rather as advisable than as necessary), then the form of your feet will be a topic for mathematical science, precisely so far as the relations involved in this form constitute a system reducible to certain fundamental principles, and such that the characters of this system can be deduced from these principles. But mathematical science will have nothing to do with the question why you have any feet at all, or why you have not fins instead. If one conceives an absolute being possessed of a totality of perfect mathematical knowledge, so that it defined with absolute adequacy all possible relational systems, even such a being, so far as it was merely mathematical, would define only general types of ideal objects, and not individual objects such as *these* boots and feet and fins, unless, indeed, it added to its mathematical determination such will-decisions as distinguish the individual deed that we do from the possibility that we leave undone. In brief, a form of intuition, if such exists, is precisely a character belonging to the individual nature of man as a real being, and is not a mathematical necessity. It is a mathematical necessity that an ideal entity defined in general as 'a spendthrift' will become bankrupt *if* his capital is so much and *if* he regularly exceeds his income by so much a year. You can provisionally predict when such a spendthrift will become bankrupt. But there is no mathematical necessity that in the real world anybody should be a spendthrift. That result, if it happens, is due to free will, or to inherited disposition, or to training, or to the devil, or to whatever other existence you decide to take into account. As I regard this distinction between the general definition of an ideal necessity and the individual decision of a will as valid from an idealistic point of view just as much as from an empiristic point of view, as I regard the Absolute as subject to this distinction quite as much as we are, just because

it is an absolute distinction, I should myself fully agree that a Kantian form of intuition, if you can prove its existence in our own nature, has absolutely no interest as the foundation of any mathematical science, except in so far as it may suggest to some mathematician the particular ideal topics upon which he finds it convenient to build up a mathematical theory.

So much for the way in which the whole modern mathematical development is distinctly opposed to the Kantian conception that something called a form of intuition, distinct from a conceptual system, is a necessary basis of mathematical investigation. But there is indeed quite another aspect of the Kantian doctrine to be considered. Kant, after defining with a natural, but to us no longer interesting, narrowness the business which he calls the mere analysis of pure concepts, decided very correctly that so barren an undertaking as declaring that a rational animal is rational could be of no service for enlarging our knowledge. He accordingly maintains, in the form of the famous distinction between synthetic and analytic judgments, that every significant science which truly enlarges our knowledge depends upon a genuinely constructive and synthetic process. He also very correctly pointed out that every productive type of reasoning depends upon its own sort of experience. Whoever reasons, unquestionably observes something. That is, whoever considers some ideal object, and yet enlarges his knowledge as he does so, gets this knowledge from actually observing what happens to his idea as he works over it. Now observing what happens to one's ideas as one works over them is indeed definable as a kind of rational perception. But the possibility of such rational perception exists quite as much when you are considering the idea of God, or Kant's favorite idea of the possibility of experience, as when you are observing facts of spatial experience, or your boots. There is indeed a great difference between observing an ideal process, and making a decision as to which one of two ideas, whose consequences you have ideally observed, you shall henceforth allow to be individuated as the deed that you choose. There is also a sharp difference between observing such an ideal process, and looking to see whether that which the natural world permits to exist does or does not accord with your ideas. In either case you are observing a process which expresses a purpose. But abstract ideal processes without final and individual decisions, are observed in a way which differs from the way in which decisive and individual facts are identified as actually or as probably real facts of existence. For the ideal processes, with whose consequences mathematical science is alone concerned, are universals in the abstract sense. What you observe as the consequences of such an abstract idea may or may not accord with what your own personal

decision, or the decision of the world-will permits to exist as individual fact. Hence observing a mathematical necessity is never the same as observing an individual existence. And for the same reason observing a mathematical necessity is never the same as observing what we call a phenomenon of nature. Nevertheless, observing a mathematical necessity is indeed observing a process of ideal construction, and its results. And every such process of ideal construction unquestionably has a form. This form is, however, not what Kant meant by a form of intuition as distinct from a form of thought, for what you observe when you observe mathematical truth is a precisely and abstractly definable and general *necessity*, which is neither the perception of a fact in the natural world, nor yet a final decision of your own will, nor yet a metaphysically individual thing; but which is precisely *the general way in which this idea has to express itself*. The principle that guides one in such observations is unquestionably what Kant meant by the principle of contradiction, when he called this principle the principle of analytical judgment. So far as an idea is defined as a type of action, a plan, a way of behavior, it necessarily implies whatever is such that the contradictory of this consequence would be opposed to the idea itself. Whenever you observe such implications you observe a system of truth which comes to you as the system of the consequences of certain ideal processes. Such an observation is, however, an observation of synthesis, quite as much as it is an observation of the truth of Kantian analytical judgments. And as a fact, the lesson of Kant's whole deduction of the categories is that analysis apart from synthesis is impossible, and *vice versa*. In consequence, mathematical truth is indeed truth relating to a system of possible experience. And the mathematician observes the structure of this system empirically. Only because what he observes is an abstract process of construction, not an individual phenomenon, the truth that he discovers is of abstractly universal application to all things, whatever they may prove to be—and if such there be—that conform to his ideal constructions. Mathematical insight is, then, not without experience, and, if you please to use the term, not without intuition. But the intuition is not of perceived diagrams, nor of the special conditions of human experience, but of the relational structure of an ideal system.

Mathematical science has nothing to say, for instance, as to whether either human beings or the inhabitants of Mars are necessarily forced to count. Mathematical science defines the eternal validity of numerical truth. This truth is true for us. It is also true for the inhabitants of Mars, *if* there are any such. We experience it to be true because we try an ideal experiment, and see that

what was true in this ideal case must needs be true of an infinity of other ideal cases, precisely because of the abstract nature of what we have observed. This which we have observed must be true for all beings and at all times and places, because the opposite would be contradictory. But mathematical science has nothing to say as to whether or no we, or the inhabitants of Mars, must be beings such as are able to perceive this truth. Kant, however, was quite wrong in supposing that the application of the principle of contradiction would give us an analysis only of commonplaces. He was quite right in supposing that whenever we think we engage in a constructive process and observe something. But what we observe when we think is, as the non-Euclidean geometers show, frequently so general that we can define vast numbers of objects that we never hope or even desire to perceive; precisely as a moral agent is capable of conceiving accomplished plans of action that he never hopes to carry out, and that in many cases he deliberately forbids himself to carry out. Yet every consideration of a plan of action is an ideal sort of acting, which simply does not carry itself out into the individual deed, but remains abstract and general.

It is a perfectly fair question to ask, What is the universal form of that abstract type of ideal experience upon which all reasoning processes depend? This, however, is the question, not of the Kantian forms of intuition, but of the categories. The forms of thought are unquestionably the forms of mathematical science. That is what the whole recent mathematical theory has made manifest. On the other hand, the immortal soul of the Kantian doctrine of the forms of intuition remains this, that thinking itself is a kind of experience, that true thinking is synthetic as well as analytic, is engaged in construction of a peculiar kind, and not in mere barren analyses such as the statements that all rational animals are rational. Kant was right that the novelties of mathematical science are due to the observation of the results of constructive processes. He was even right that the observation of a diagram, in so far as the diagram is simply the expression of an idea, may be an admirable guide in the thinking process. He was wrong in supposing that a special form of intuition, such as that of Euclidean space, can have any other necessity than that which every individual fact in the world possesses. Every fact, in my opinion, is what some will decide it to be. Every fact is individual. But that does not determine the range of ideal possibilities, nor the range of mathematical truth. For mathematical truth is concerned with the consequences of ideas in advance of, or apart from, the decision whether those ideas which are then taken as what I have elsewhere called internal meanings, are expressed in individual realities. Mathematical science is ab-

stract, and can, therefore, never define the whole truth. For the whole truth of things is always individual, and is never expressible in terms merely of abstraction, nor in terms of merely logical implication. On the other hand, as soon as you consider any individual fact, as, for instance, the fact that this man has this form of intuition, you consider what, if true, is no topic of mathematical science. I conclude, then, that Kant's theory of the basis of mathematics has been in one respect wholly abandoned, and properly so, by the modern logic of mathematics. In another respect, precisely in so far as Kant declared that constructive synthesis and observation of its ideal results are both necessary for mathematics, Kant was unquestionably right. And as nobody before him had so clearly seen this fact, and as the progress of mathematical logic since his time has been so profoundly influenced by his criticisms, we owe to him an enormous advance in our reflective insight in this field.

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SOME OUTSTANDING PROBLEMS FOR PHILOSOPHY

FOR a long space of time the domains of philosophy and mathematics were regarded less as intersecting spheres of interest than as adjacent fields separated by a kind of 'dead line' that no worker in either might venture to cross without risking the loss both of his identity and of the respect of his fellows. I once heard a distinguished mathematician say that the study of mathematics acts on the metaphysical instinct like sulphur on the itch. Undoubtedly that savant had a philosophy, but, like the Irishman's snake, he was unconscious of it, and he was the less tolerant on that account. On the other hand, the mathematician has not infrequently been compelled to forgive such disrespect as that of Sir Wm. Hamilton's on ground analogous to the good old Catholic principle of invincible ignorance. Happily, the tokens more and more abound that the uncanny day of such misunderstandings is rapidly passing away. It may return again, but not for some generations. A new era has begun that shall be distinguished by intellectual sympathy and co-operation, by increasing wholesomeness of scholarship. The indicia have reference to old records. They indicate the reestablishment of broken traditions of an older time when philosopher and mathematician were often united in a single personality. Such men as C. S. Peirce and Pearson and Mach and Couturat and Poincaré and Georg Cantor, exemplify clearly enough that the larger incarna-

tions are not impossible even in these crowded days of narrow specialization.

Nowhere else is the community of interest so vast and conspicuous as in the theory of assemblages. By the latter I mean the doctrine variously entitled *Mengenlehre* and *Mannigfaltigkeitslehre* by the Germans, *théorie des ensembles* by the French, and often referred to in English as the theory of manifolds or aggregates, or by other analogous designations. Many of its ideas date at least as ancient as historical thought, and have figured in important ways in logic, in philosophy and in mathematics steadily from the earliest times. On the other hand, many of its chief concepts, its characteristic and ruling notions, and their organization into a distinct and self-supporting body of coherent doctrine, may be said to constitute the latest great mathematico-philosophical creation. If mathematics is the most fundamental of the sciences, assemblage theory is destined to be regarded as the most fundamental branch of mathematics. Herein lies its immeasurable import for philosophy. Viewed in retrospect, it appears as an inevitable product of the modern critical spirit. Already it is seen to underlie and interpenetrate both geometry and analysis. Its connection with modern logic is most intimate, often approximating identity with the latter. And philosophy in some wide-awake quarters has already recognized in the doctrine of manifolds her own most promising and inviting field.

Now in this young, vigorous and rapidly unfolding doctrine, there have been for some time certain recognized outstanding questions that ought to challenge mathematician and philosopher alike, in equal measure certainly, if not in manner the same. These problems are of two classes: those that have been very recently solved, and those which still await solution. I purpose to state some of the problems here in the hope that some rising philosopher may feel their challenge and, in case of the latter class, direct a yet unconquered genius to their solution.

A question of the former class is: *Can every assemblage be well-ordered?* It has just received an affirmative answer by E. Zermelo.¹ The fundamental character of the problem, the simplicity of the means employed in its solution and especially the bearings of the solution on kindred dependent questions, justify a brief report upon the matter in this place.

What, then, is an assemblage? Any collection of objects or things (elements) of whatsoever kind or kinds is an assemblage. An assemblage, to be mathematically available, to be available, that is, for the purposes of rigorous thought, must be *defined*; and it is

¹ *Mathematische Annalen*, Band 59, Heft 4, November, 1904.

said to be defined when and only when we know enough about it to know that an arbitrarily given object either is or is not an element of it. When is a defined assemblage said to be well-ordered (*wohlgeordnet, bien défini*)? The answer is, when and only when its elements have been so disposed in fact or in thought that one may affirm of it the following three propositions: (1) of any two of its elements a and b , one, as a , *precedes, i. e., is of lower rank*, and the other, as b , *comes after, i. e., is of higher rank*; (2) of any triplet of its elements a, b, c , if a is of lower rank than b , and b is lower than c , then a is lower than c ; (3) the assemblage has an element of *lowest* rank, a *first* element, and the same is true of *every part* of the assemblage; that is, of every assemblage whose elements are elements of the given assemblage.

The simplest possible example of a well-ordered assemblage is that of the integers in their natural order $1, 2, 3, \dots, v, v+1, \dots$, it being agreed that any *element* (figure) v shall be of *lower* rank than an element $v+\sigma$ if the *number* v is *less* than the *number* $v+\sigma$. It is easily seen that the assemblage in question satisfies the three necessary and sufficient conditions. The same is true of the assemblage of all *rational* numbers greater than *zero* and less than 1 , if it be agreed that of every two such numbers $\frac{a}{b}$ and $\frac{c}{d}$, that one shall have lower rank which has the smaller number for sum of its terms, and that, if $a+b=c+d$ in case of two numbers $\frac{a}{b}$ and $\frac{c}{d}$, then the smaller of these shall have the lower rank. Thus arranged, the assemblage stands: $\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{2}{3}, \frac{1}{5}, \frac{1}{6}, \frac{2}{5}, \frac{3}{4}, \dots$. But if the same elements be arranged in their so-called natural order, that is, on a line of unit-length from zero to 1 , and if it be agreed that of two numbers that one shall be of lower rank whose distance from the origin (*zero*) is the less, then, though the assemblage is indeed *ordered*, it is *not well-ordered*, for in its present arrangement it fails to satisfy condition (3); it has, for example, no *first* element, no element of lowest rank, and the like is true of countless numbers of its parts. It is plain, then, that not every assemblage, not even every ordered assemblage, is well-ordered. What Zermelo has established is that every assemblage *can be* well-ordered.

To such as know that it is impossible to *denumerate* the points of a continuum, that is, to set up a one-to-one correspondence between, say, the points of a unit-line and the integers, Zermelo's result is apt to be surprising, and, because of its far-reaching implications, it is really astonishing. Of such implications, two of the most important and striking are these: *first*, every conceivable assemblage can be so arranged that each element (unless it be the last, an insig-

nificant special case) shall be followed by a *next*; and *second*, that every assemblage can be so arranged that *every* sequence of its elements a, b, c, \dots in which a has higher rank than b , b higher rank than c , etc., must have an *end*, a last element. Any one who will seriously attempt to conceive the points of the room in which he is sitting so arranged that the assemblage shall have the two properties just stated, can not fail to have a deepening sense of the marvelous character, the awful comprehensiveness, of Zermelo's proposition.

And what, pray, is the stuff of which the demonstration is woven? What are the auxiliary concepts employed? Few indeed and simple, though tenuous and slippery and lithe. First is the notion of the assemblage of *all* the *parts* of a given assemblage E . Another idea is that of associating or pairing with each of those parts some definite element of the part, to be then known as the 'distinguished' (*ausgezeichnete*) element of its associate part. A third concept is that of the *off-cut* of a well-ordered assemblage, the term denoting the part (of a well-ordered assemblage) whose elements, all of them, are of lower rank than a given element of the assemblage. Obviously to each element of the assemblage there corresponds a definite off-cut. A very important rôle is played by the notion of γ -*assemblage*: an assemblage A is a γ -assemblage A provided it is well-ordered and, in addition, possesses the property that, if e is an arbitrary element of A and if O is the off-cut corresponding to e , then e is always the 'distinguished' element of $E - O$, where the latter symbol denotes all the elements of E except those of O . Such are the *Sommerfäden* out of which the author has contrived the beautiful figure of his demonstration.

I have already pointed out two of its important bearings. Another of its consequences is that it immediately removes from the field of doubt or controversy another question of the utmost fundamental significance. I refer to the question concerning the *comparability* of every pair of assemblages. The meaning of the question can be made sufficiently clear by a word of explanation. Two assemblages, A and B , are said to be *equivalent* when and only when it is possible to set up between the elements of A and those of B a one-to-one correspondence. The simplest familiar example of such equivalence is that where A denotes the assemblage of integers and B that of their doubles. Such examples abound in the worlds of space and number. On the other hand, A is said to be *less* than B and B greater than A , when A and B satisfy the two conditions: (1) A has no (proper)² part equivalent to B ; (2) B has

² A proper part of A is a part composed of some but not all of the elements of A .

a (proper) part equivalent to A . Now either of the relations, equivalence and less (greater), excludes the other. That admits of rigorous demonstration. But herewith is not resolved the question whether one or other of the relations subsists between every two assemblages. If A and B are equivalent, then neither is less than the other; if one of them is less than the other, the two are not equivalent; but herein is plainly no ground for inference that they must be *either* equivalent *or* one less than the other. Possibly in some cases neither relation holds, *i. e.*, A and B may not be comparable. In such an eventuality, we should have to recognize two classes of assemblages: the comparable and the non-comparable. Behold the matter from another point of view (due to Borel). If A and B be two assemblages, then the following four cases may arise: (1) A has a part equivalent to B but B none equivalent to A ; (2) B has a part equivalent to A but A none equivalent to B ; (3) A has a part equivalent to B and B has a part equivalent to A ; (4) A has no part equivalent to B and B none equivalent to A . The symmetry here is noteworthy. In passing, I wish to signalize the importance of the principle of symmetry in fundamental questions of logic, and to suggest the topic, the logical significance of esthetic principles, or its equivalent, as possibly worthy of an aspirant to the doctorate. To resume, it is noteworthy that the four cases are not merely hypothetical, they *exist*. Cases (1) and (2) are, of course, essentially the same, and are exemplified by taking for A or B a point continuum and for B or A the totality of integers. In such case one is less than the other. To exemplify case (3) it suffices to let A stand for the assemblage of real (rational and irrational) numbers and to let B denote the assemblage of the irrational numbers. It has been proved that if A and B fall under case (3), they are equivalent. Case (4) alone remains. That it is not *empty* is shown at once by letting A denote the assemblage a_1, a_2 and B the assemblage b_1, b_2 . In this *particular* example, A and B are indeed equivalent, but does the notion of equivalence attach to *every* pair A and B of (4), a case shown to exist? Georg Cantor, easily the primate of all contributors to *Mengenlehre*, believed the answer should be affirmative. But he had not been able to give a scientific, *i. e.*, a *transferable*,³ demonstration, and men of the type of Borel held the matter in doubt. Was Cantor's conviction *rooted* in esthetic soil? Was it due to a fine commanding sense of what esthetically ought to be? At all events his conviction was just, if not logically justified, for it is an obvious corollary to Zermelo's

³ Concepts and proofs are essentially *social* affairs. They must be intelligible to at least two minds, or, what is tantamount, to one person at least twice. Such need not be true of emotion.

proposition that every two assemblages are comparable and that, if they belong to case (4), they are equivalent.

So much for 'problems' that may be regarded as very recently settled. I turn now to the second kind. Of these the most conspicuous is that of determining whether there is thinkable an assemblage having a power intermediate to that of the denumerable assemblage and that of the continuum. These terms demand explanation. If the assemblages A and B are *equivalent*, they are said to have the *same power* (*Mächtigkeit*). An assemblage having the same power as the assemblage $a_1, a_2, a_3, \dots, a_n, \dots$, without end, is said to be denumerable, or to have the power of the denumerable assemblage. To avoid confusion, it is well to note that *power* has not been defined; it is *sameness of power* that has been defined. An assemblage, such as that of the irrational numbers, that has the same power as that of the real numbers, or the points of a line-segment, is said to have the *power of the continuum*. Now it is well known and readily admits of proof that, if A has the power of the denumerable assemblage and B the power of the continuum, A and B have *not* the same power. In fact, as above noted, A is, in the case supposed, less than B . Is there an assemblage I intermediate to such an A and B ? That means, is there an I greater than A and less than B ? All efforts to prove or disprove that such is the case have been thus far baffled. The proof offered by the late Paul Tannery has been found defective. The problem meets one on the very threshold of assemblage theory and *apparently* demands acumen and ingenuity rather than a large fund of mathematical knowledge.

It may be useful to view the question from another point of view. As is well known, Cantor has defined 'classes' (I), (II), \dots of higher and higher power, where by *higher* is here meant that (I) regarded as an assemblage is less than (II) similarly regarded, and so on. This achievement of his, which is one of the boldest and most brilliant in the annals of mathematic genius, was done as follows. He made use of three *principles of number generation*. These, stated in full generality, are: (1) the addition of unity, 1, to a number already formed; (2) positing, in case of an endless sequence of numbers (integers) having no greatest, a new number that shall be the first integer after the sequence and immediately greater than every number of the sequence; (3) subjecting all numbers generable by (1) and (2) to the condition that all those preceding any specified one of them shall have the same power as a class already defined.

Starting with 1, class (I), 1, 2, \dots, n, \dots , is defined by (1). By (2), ω is put to be first after (I) and greater than every number of (I). Combination of (1) and (2) yields $\omega + 1, \omega + 2, \dots, 2\omega,$

$2\omega + 2, \dots, \omega^2, \omega^2 + 1, \dots, n\omega^2, \dots, n\omega^\omega, \dots$. Class (II) is struck out by application of (3) to the foregoing sequence of transfinities. Cantor proves that (I) and (II) are not of the same power and that there is no assemblage between (I) and (II) in the sense of intermediate above explained. Hence our problem is to show that (II) has the power of the continuum or that it has not. It is interesting to note that with exquisite impropriety Cantor has denominated his three principles *Logical Moments*. Moments they undoubtedly are; but logical, they are just as undoubtedly not. Neither are they illogical. They are super-logical, being precisely the critical points in his process of transfinite creation where logic pauses for a *new start*, the adoption of a *principium*, a choice, never compelled, but only solicited and always declinable. The possibility, the spiritual vision, of a generalization, logic may and often does present, but the deed of generalization logic is impotent to do or force.

I shall close by stating another outstanding question that is immediately suggested by the procedure just described, though the same question is encountered on many another path. It is: Is there in the *constitution* of the human mind any limitation to the definition of higher and higher powers of assemblages? Is, in other words, an assemblage of all assemblages and elements logically available? Is the notion meaningless? Is it free from interior contradiction? Would such an assemblage have to be an element of (in) itself? Whatever the answers be, can we, do we, ever or always, dispense with such a 'notion'? Can the word *all* be safely used *conjunctively*—in the sense of none excluded?

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REVIEWS AND ABSTRACTS OF LITERATURE

Elements of Metaphysics. A. E. TAYLOR. London, Methuen & Co.; New York, The Macmillan Co. 1903. Pp. xvi + 419.

This book is the most comprehensive and systematic treatise on metaphysics that we have yet had from a living writer in English. It discusses with definiteness and clearness of style and in well-ordered arrangement the chief problems of ultimate philosophy. Professor Taylor is a disciple, though not a slavish follower, of Mr. Bradley, and he endeavors in a constructive and original fashion to unite the general speculative position of Mr. Bradley with the interpretations of actual experience which have found fullest expression and elucidation in the writings of Professors Ward and Royce. And whatever one's opinion as to the final coherence of the various strains in Professor Taylor's doctrine one must

recognize the eminent skill with which he has illustrated and defended his position in relation to the physical and psychological sciences. In fact I should be disposed to say that the herein attempted synthesis of Bradleian absolutism with the teleological conception of knowledge and the self is most instructive in the books devoted to 'Cosmology and Rational Psychology.'

The first book, entitled 'General Notions,' discusses successively the 'Problem of the Metaphysician,' 'Metaphysical Criterion and Metaphysical Method' and the 'Subdivisions of Metaphysics.' Metaphysics, we are told, deals with the *general* character of reality, and, while by its intellectual or reflective procedure it differs from poetry and religion, its goal is the same as that of mysticism. The method of metaphysics is *analytical, critical, non-empirical and non-inductive*; its material is *immediate experience, 'psychical content' or 'psychical matter of fact'*; and its criterion, the law of contradiction. Reality is identified at the outset with immediate experience or psychical content in so far as this is self-consistent (p. 20). And here at the outset Professor Taylor pre-judges the whole case by an offhand assertion that reality must be self-consistent. We may say that *knowledge* of reality must be self-consistent, but is there any meaning in making such an assertion about reality if reality be identical with experience? There seems to be a confusion in the assertion that experience is bound to conform to the law of contradiction. For it is precisely the contradictions in experience that drive us beyond itself to a *thought-construction* of reality. Again, if we base philosophical construction on actual experience, is it not misleading to assert that metaphysical procedure is *non-empirical and non-inductive*? This, it seems to me, would be to commit philosophy to a barren formalism; and, indeed, Professor Taylor's own work is perhaps most valuable when he does not stick to his method.

In the second book, on the 'General Structure of Reality,' the author lays down the fundamental principles of his metaphysics. In chapter I, 'Reality and Experience,' the absolute or ultimate reality is defined as that structure of the world-system of which all purposes, each in its own way, must take account. The author has already defined reality as psychical content or *immediate* experience, and he now endeavors to show that these definitions coincide. Purpose springs from, and seeks its goal in, *feeling*. 'To say that reality is essentially one with immediate feeling is only another way of saying that the real is essentially that which is of significance for the attainment of purpose' (p. 55) (to which, it seems to me, should be added 'and for the defeat of purpose'). But purpose is always the expression of *individual interest*, and so Professor Taylor adds to his definitions this: 'Reality is uniquely individual.' Throughout the whole work constant use is made of this teleological conception of reality, and insistent emphasis is put on the fact that Reality is immediate psychical content or *feeling*, in which the distinctions of reflective cognitions have been merged and lost, oneness of feeling and insight (p. 61), etc. Now this higher and integral immediate experience he sometimes recognizes as including the labor of thought as this is developed

through ideal activity; but he nowhere makes clear the relation of thought to experience. After all it is individual selves who *have* experience and in whom thought is organic to experience. It is surely no more legitimate to take some type of feeling-experience, such as esthetic or personal emotion, separate it from its place in the total life of the self, and hypostatize it as the Absolute, than it would be to take pure thought. What is this but *Erfahrung überhaupt*, an abstraction like *Bewusstsein überhaupt*? And, while the author repudiates the category of whole and part as inadequate to the nature of reality, he frequently speaks of the 'absolute' or 'universe' as one whole of experience, which at once includes, but in itself differs from, the finite individual experiences which are its contents. It is just here that difficulties begin with Professor Taylor's doctrine. In the remaining chapters of Book II., 'The Systematic Unity of Reality,' 'Reality and its Appearance—the Degrees of Reality,' 'Substance, Quality and Relation,' and 'Change and Causality,' we find discussed the main characteristics of the 'Absolute' or 'Ultimate Reality' in relation to the world of finite individuals.

The degree of reality which anything possesses, we are told, corresponds to its degree of *individuality*, and the degree of 'individuality' depends (1) on *comprehensiveness*; (2) on *inherent systematization*' (p. 110). The whole of Reality is the one perfect individual (p. 113), and its individuality means that it is the systematic embodiment of a single coherent structure in a plurality of elements or parts, which depend for their whole character upon the fact that they are the embodiments of precisely this structure. So far each finite individual seems to have his integral place and function in the whole. But now we find the emphasis falling on the *unity, continuity* and *timelessness* of Reality. The whole of reality is one infinite substance (p. 139), emphasis is laid on its supra-relational character, and it is argued in the criticism of causation that the view that there is discontinuity in events is inherently self-contradictory. (The force of the argument depends here on ruling out the possibility that causal interaction is an immediate relationship of real self-active, and, therefore, so far *discrete* centers of being.) These and similar expressions reveal the Spinozistic trend of Professor Taylor's argument, and the treatment of *time, evolution* and the *self* in Books III, and IV. becomes significant in this regard. The author recognizes that time is essentially bound up with the life of finite selves, and is hence *par excellence* the historical category. And, in his valuable discussion of evolution, he admits a *proximate* reality in the process of evolution which is evaluated in terms of finite individuality. Furthermore, the reality of the self is bound up with growth or development. But the whole of Reality can not develop; therefore evolution, history and selves with their discontinuous series of actions and experiences (p. 311) have no place in Ultimate Reality. For the entire time-process is appearance, and the lives of finite selves are bound up with it.

Now, on the other hand, we are told in the concluding chapter that the Absolute is the final realization of our intellectual and our practical ideals. And great stress is laid throughout on the *teleological* character of indi-

viduality in science, in action and in experience, as a key to the nature of reality. Now it seems to me that human *interest, purpose, striving*, as marks of spiritual individuality, are essentially matters of growth, of history, of what our author calls the time-process. The timeless, supra-relational Absolute Experience and the finite, teleological activity of the human individual lie unreconciled in his system. He starts out from the Bradleian Absolute in which all relations and distinctions are submerged or absorbed, and then he recognizes a relative reality in the actual dynamic and historical movement of selves; but he does not achieve a synthesis of these two *motifs*. He does not, indeed, face at all the question, what must ultimately be meant by ascribing any reality to the finite as a 'content' of the Absolute Experience. The latter is above all the distinctions and imperfections of human experience. How then do these enter into and become constitutive of its placid, static unity? How do their pains contribute to its eternal bliss? We are told, indeed, in the chapter on the Self that the absolute unity of experience may be best prefigured as a *society of selves*. But in any actual society the unity is effective and the society coheres just in so far as the unity is a principle of action in each and every individual self. But the absolute is no self, and since all selves are finite the infinite unity of experience can not dwell in their thoughts alone. Where then is it? It seems to me that a more consistent consideration of the actual nature of so-called finite selves, and a closer regard of the time-process, would have led the author farther away from his Spinozistic and Bradleian Absolute, and closer to an interpretation of reality in terms of selfhood, and to a higher valuation of the time-process. It would have led, too, to a recognition of the inadequacy of such conceptions as psychical 'content' or 'matter of fact' to describe reality, in view of the purposive or self-active character of the human individual. And finally it would involve a more explicit recognition of the transcendence of experience which is involved in metaphysics.

In Book III., 'Cosmology,' the author works out in a very interesting and convincing manner the theory that the physical order must be the presentation to our sense of a system or complex of systems of sentient subjects, and that the mechanical view of nature has only the value of a methodological postulate or working view for physical science. Hence the principles of mechanical physics have only relative validity. Hence, too, 'laws of nature' represent only statistical averages, and we have no guarantee that actual concrete cases exhibit *exact* conformity to law. "Our failure to detect specific forms of sentience and purpose in what we commonly call 'inorganic' nature need mean no more than that we are here dealing with types of experience too remote from our own for detection" (p. 209). In refuting the mechanical view of nature Professor Taylor neatly shows that the very conception of a machine arises from and involves intelligence and purpose.

The whole treatment of 'Matter,' 'Law,' 'Descriptive Science,' etc., constitutes one of the very best bits of cosmological discussion in English.

In chapter I. of Book IV. the author argues effectively against the purely atomistic conception of psychology as a surrogate for an incom-

plete physiology. He recognizes that the psychological conception of conscious life is a 'transformation' of actual experience, and explains this transformation in terms of Avenarius's 'introjection' theory. Professor Taylor finds that psychology has the positive and important function of furnishing general symbols for ethical and historical appreciation. In the next chapter he argues for the interactionist view as the best scientific working hypothesis as to the relation of soul and body, laying stress on the breakdown of parallelism in the face of the teleological aspects of mental life, and its consequent failure to make room for the application of psychology to ethical and historical appreciations. The author makes it clear that the whole problem is a 'scientific' one, inasmuch as immediate experience reveals no dualism of body and soul.

I have already referred to his treatment of the 'self' in the next chapter. There are many points that might be discussed here, but space limits forbid my referring to more than one. Professor Taylor argues that, since the self requires an external environment and depends on the contrast-effect generated by social relations, the self is essentially finite. It seems to me that the argument equally applies to 'experience.' The latter involves the contrast between the experiencing 'subject' and the 'content' or 'object' of experience. And it is a mere quibble to say that we have some experiences without this distinction, since in knowing and asserting that we have them we are already conscious of the distinction. I think a good case could be made out for an absolute self by developing the conception of environment as 'organic,' rather than merely external to the self, and of 'social contrast' as a phase of self-expression and inter-communion.

The chapter on 'Moral Freedom' is one of the best in the book. Here the author shows the common ground of the fallacies of determinism and indeterminism in the assumption that all rational connection must be of the type embodied in the temporal causal series, and points out that we do not know and can not say that a man's character is fixed as thus and so until he has actually expressed his individuality; and that hence, although a man's action is the expression of his selfhood, we can never predict absolutely what he will do. Is, then, character created in and by action?

In chapter V, 'Some Metaphysical Implications of Ethics and Religion,' it is argued that Reality must somehow make provision for the gratification of our ethical, religious, and esthetic interests. But we cannot say *how* this is done, and 'perfect virtue,' 'perfect happiness' and 'infinite progress' are self-contradictory concepts. In religion we conceive of the ideal of perfection as already existing in an individual form. God is the timeless, infinite Absolute, and in him evil is seen to be mere illusory appearance. Here again it seems to me when we recur to the Absolute our finite interests, activities and deeds come perilously near losing all their reality, and our old difficulty as to the relation of the Absolute to the teleologically conceived human self becomes very dubious.

In the last chapter we are told that the Absolute transcends both thought and will. The conclusion involves an element of agnosticism

and of mysticism. Metaphysics adds nothing to our information, and yields no fresh springs of action.

The work is provided with a splendid analytical table of contents. Whatever one's personal attitude toward the theories advanced, one must pay tribute to the wide knowledge, speculative keenness and clearness of expression of Professor Taylor's work. No serious student of fundamental problems can afford to neglect this book.

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Time and Reality. JOHN E. BOODIN. *Monograph Supplement, Psychological Review*, October, 1904. Vol. VI., No. 3. Pp. 119.

The common opinion is that time is one-dimensional, continuous and something that essentially involves direction. These views Professor Boodin contests. He identifies time with the mere 'fleetingness' of reality; he would make its function exclusively negative. It is 'absolute non-being.' 'Relative non-being has to do with differences at different points of reality,' but absolute non-being is 'dynamic,' it is 'that property of the real subject-object' (*i. e.*, of the real world) which 'creeps into all our systems of truth and falsifies them, necessitating new ones,' which makes necessary 'incompatible judgments,' that is, 'different judgments as regards the same attribute of reality at the same point' (p. 28).

The question raised by this definition is distinct. It is not whether of several uses of the term time one shall be selected by convention as *the* use. We are familiar with the 'paradoxes' of time, due to the supposition that one term, and presumably one thing, includes aspects of reality in some way antithetical. Dr. Boodin would make the import of time perfectly simple, and, indeed, *purely negative*. And the question therefore is, what is this absolute non-being? And what is the significance of calling it time?

Absolute non-being is our *invention* 'to account for passing away and novelty' (p. 118). It is the antithesis to the 'permanent or habit' character of reality. 'Precisely the opposite of what is said of space must be said of time' (p. 29). But in every description that Dr. Boodin gives of time, except in this bare definition of it, we find included phases of permanence and positivity. For example, time, in necessitating incompatible judgments, must hold to that identity to which the incompatibility relates. Indeed, time alone makes possible any kind of judgment (p. 62). It no less necessitates new systems of truth than falsifies old ones (p. 28). Admittedly (p. 30), without the relatively stable space system we could have no measurement of time process, and time as a negative property would be inconceivable. But what makes our 'invention' conceivable is surely *part* of its power 'to account for passing away' (*v. s.*), and is therefore part of that 'invention.' And how could pure negativity be measured?

Does not Dr. Boodin's account of time as pure negativity thus break down entirely? If, however, we would name the positive qualities of time, we must meet his objection that the properties we would most readily

predicate of time themselves presuppose time, that to call time continuous, serial or quantitative, *e. g.*, is 'meaningless,' 'begging the question' or 'viciously circular.' The logic of definition rests under a cloud, I believe. So I would consider Dr. Boodin's application of the same principle of criticism in cases where the issue is simpler.

For example, he rejects as circular the Kantian definition of continuity (pp. 42-3). Kant said we have continuity when between two points, however selected, a third can always be found. Dr. Boodin takes this to mean that the points themselves make the continuum, and notes that they do not in the case of the rational fractions. He concludes that Kant gave so 'futile' a definition of continuity only because he had unawares begged the question by presupposing a continuum. I suppose one must answer that Kant meant merely to give the mark by which we may know that points are *in* (not *are*) a continuum; so that such 'circularity' is the definition's best commendation. Just as in the geometer's definition of a point or a philosopher's definition of substance. Aristotle said a continuum is found where the parts have common boundaries. But what glues the boundaries together, asks Dr. Boodin. A continuum, by definition, exists where the boundaries are common and need no gluing. If this is circular it is not vicious.

I conclude that to be thus circular *may* commend the description of time as serial, continuous, etc. I would also point out that to define time as absolute or *dynamic* non-being is 'circular' in the extreme. For dynamic, the significant term, as well as such parallel descriptions as 'creeping in,' 'necessitating,' and 'falsifying,' are in terms of process and imply time, the thing defined. But such and all criticisms of his definition are more or less clouded by a doubt. For Professor Boodin distinguishes between the world of reality and the world of truth. In the latter, time is our invention to 'account for passing away'; but *really*, time is indescribable, it is only the positive that is described. So perhaps all criticisms apply only to the 'invention,' not to the real, which may be as Dr. Boodin describes it. And yet it can not be described!

Ostensibly Dr. Boodin regards the category of potentiality as but obscurely plausible (p. 73); purpose in the world means our subjective purposes, not valid of the real (p. 85). Science is right in discarding teleological categories for purposes of explanation (p. 71). All explanation, so far as it attains its ideal, is of the type of mechanical causation, where the effect equals the cause and nothing really happens (p. 48-52). Hence Dr. Boodin describes the world as dual, a world of process on the one hand, a world of truth, a 'static stare,' on the other. All description must be timeless (p. 62). The self in seeking to unify experience ignores the very process it *means* to explain (p. 52). Time renders all our systems of truth invalid; yet we have (p. 119) and should have (p. 52) a faith that 'truth shall abide.'

One may ask whether this is 'really' so, or only 'truly' so. If to the world of 'truth and ideal construction' one opposes the world of the real and indescribable process, the elusive 'individual core of being' (p. 63), then we must admit that the very duality here stated, and the difference,

is 'ideal construction.' It is, then, but a 'shadow' of the real. And, if our doubt here is self-destructive, what must be said of a faith in the abiding of a truth which is never true—of anything, and never persists through time at all.

The assumption here is that process can not be described. Dr. Boodin in his very statement of this position describes the process by which the result is attained. The categories of potentiality and purpose are his readiest tools; tendency and implication and fulfillment and direction are the fruits time brings him with the seeds of growth and purpose. Does not the biologist or the historian, too, describe life and development as *such*, in terms that we accept as descriptive of the real, or as failing in that, not because they eliminate process, but in contrast with another process known and described?

Surely, then, if we are to say anything at all of time we can not deny to it at least *direction*. Even the static 'now' of immediate experience, through which things flow, gives to the flow a 'before and after' character in virtue of a similar distinction we find attached to that 'now' *as now*. And this direction character is yet more obvious in the sense in which time flows. But with this direction comes in at least the potentiality of series and quantity; for between before and after is implied at least a third somewhat.

Simultaneity, moreover, is not simply banished from time, but the temporality is bound up with the assertion that the existence of *b* requires the non-existence of *a* and *c*, because *a*, *b*, *c* form a certain kind of series, and are therefore simultaneous in another sense. This serial character we find also in the 'now,' giving it at least two bounds and something between. Thus *b*, the now, appears successively in perhaps many different lights, all essential to its elementary time character; and series, continuity and quantity seem successively to be denied and asserted of time, in different connections.

These remarks I suppose to be entirely trite. They are but preliminary to an expression of wonder that the attempt should be made, as it is in Dr. Boodin's book and in Hobhouse's 'Theory of Knowledge,' to present time as something simple, or, as in Bradley's well-known work, as something contradictory. Both attempts seem to flow from the idea that the *concept* time must be a perfectly simple thing, like—well, I know not what. Surely the task is to fill out the account, such as Aristotle offered, of the way in which various conceptions are held together in the one conception of time, and not, after the entirely false pattern of generalization, to seek one abstract concept, other than time, which shall 'unify' by obliterating all the complexity of time.

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JOURNALS AND NEW BOOKS

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. Band X., Heft 4, December, 1904. *Die Aufgabe wissenschaftlicher Ästhetik* (pp. 433-480): C. D. PFLAUM. - Scientific esthetics is defined as the knowledge of the purely intensive valuations of the contents of the soul. In support, the opinions are cited of authorities from Plato to Jonas Cohn, the definition being taken from the last. Particularly it is maintained that Kant, in spite of appearances, did not really deny the possibility of a scientific esthetic, nor exclude therefrom consideration of values. *Über die Verwechslung des sinnlich Angenehmen mit den Kunsteindrücken und einige andere Folgen der sogenannten empirischen Ästhetik* (pp. 481-509): R. SKALA. - *Naturgefühl* and *Kunstgefühl* are to be identified. Empirical esthetics considers esthetic valuation only from the subjective side. Fechner makes the distinction between pleasant and esthetic feelings one of degree; but, in fact, he overlooks the esthetic feeling altogether. Empirical esthetics is responsible for the modern idea that two arts taken together will produce more effect than either one alone. *Gerechtigkeit* (pp. 510-520): B. STERN. - Righteousness is, first, to avoid interference in the psychical life of other men and of beasts, and, second, in that of one's own psychical life. *Das Problem der Willensfreiheit vom Standpunkt des Sollens* (pp. 521-540): H. STAEPS. - Freedom rests on belief in the power of the ideal. It frees us from the dominion of natural lusts and from egoism; it gives rule to the latent force of truth, beauty and goodness. *Jahresbericht über Erscheinungen der Soziologie in den Jahren 1799-1904* (pp. 543-561): R. GOLDSCHIED. - Special attention is paid to 'Altersklassen und Männerbünde. Eine Darstellung der Grundformen der Gesellschaft' by H. Schurtz.

ARCHIV DER GESCHICHTE DER PHILOSOPHIE. Band XI., Heft 2. January, 1905. *Die Atomistik und Faradays Begriff der Materie* (pp. 139-166): O. BUEK. - Faraday's theory is contrasted with that of Boskovich. The latter presents definite logical difficulties; the former is incomplete, being the basis of Thompson's recent theories. Fechner's error lay in taking nature as something given instead of a useful construct. Through this error have crept in mythological and childish treatments, such as Zöllner's. The logical relation of Faraday's doctrine to that of Helmholtz and other more modern theories is still to be determined. *Voltaire als Philosoph* (pp. 166-215): P. SAKMANN. - A detailed study of Voltaire's conception of philosophy, his epistemology, his cosmology, his idea of God and proof of God's existence. While he followed Locke in the main, his philosophical capacity was greater than is commonly supposed. *Herder und Tetens* (pp. 216-249): W. UBELE. - The comparison refers to their treatment of the theory of language. Tetens is less rich, but more precise; he emphasized the practical origin of speech and the place of conception therein. Herder asserted speech

to be fundamentally a matter of emotion. *Le commentaire arabe d'Averroës sur quelques petits écrits physiques d'Aristote* (pp. 150-252): H. DERENBOURG. *Vétiles d'un lecteur de Platon* (pp. 253-264): L. M. BILLIA. - A discussion of texts and interpretations in three of the dialogues. *Die 'Geschichte der Philosophie' am zweiten philosophischen Kongress in Genf* (4-8 September, 1904) (pp. 265-270): K. JUNGSMANN. - *Jahresbericht; Die Polnische Philosophie der Letzten zehn Jahre* (1894-1904): H. VON STRUVE. - *Die neuesten Erscheinungen. Eingegangene Bücher.*

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE. Band XXVIII., Heft 4. December, 1904. *Über ein Paradoxon in der Logik Bolzanos* (pp. 375-392): J. K. KREIBIG. - Bolzano contended that in some instances the law of the inverse proportions between the content and extent of a concept does not hold; his examples are not true exceptions, but serve to bring out certain neglected features of the law. *Die Geschichte der Erziehung in soziologischer Beleuchtung* (pp. 393-421): P. BARTH. - The growth of the 'encyclopedic education' in Greece, and its social causes; similar social changes in Rome lead to the borrowing of Greek educational ideals. Individualism the fundamental cause of degeneracy. *Zu Kants und Lockes Gedächtnis* (pp. 422-426): P. BARTH. *Besprechungen* (pp. 427-472): K. Lamprecht, *Deutsche Geschichte*: P. BARTH. F. Mauthner, *Beiträge zu einer Kritik der Sprache*: P. BARTH. S. Witasek, *Grundzüge der allgemeinen Ästhetik*: H. SPITZER. A. Posada, *Literatura y Problemas de la Sociologia*: E. DI CARLO. E. Oscar, *Nietzsches Lehre, in ihren Grundbegriffen*: R. RICHTER. H. Cohen, *System der Philosophie*: I. H. GRÜNBAUM. *Berichtigung und Erwiderung. Philosophische Zeitschriften. Bibliographie.*

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NOTES AND NEWS

THE group of experimental psychologists which met at Cornell University during the last Easter recess, held its second meeting at Clark University on Friday, March 31, and Saturday, April 1, Professor E. C. Sanford presiding. The programme was begun on Friday afternoon by an inspection of the Clark Laboratory, during which three reports were made by advanced students on research work in progress in the laboratory. Mr. L. M. Terman discussed 'Tests of Bright and Dull Boys,' Mr. A. L. Gesell, 'The Correlation of Handwriting and School Standing,' Mr. W. F. Bock, 'The Psychology of Acquisition as Shown in Learning to Type-write.' The first session was opened by Professor A. H. Pierce, who reported on researches now under way in the Smith College Laboratory on the effects of imperceptible shadows. Discussion by Professors Titchener and Sanford followed. Mr. Stevens, of Cornell University, next read a paper by Professor Max Meyer on 'Auditory Sensation in an Elementary Course,' which was discussed by Professors Titchener, Sanford and Pierce. On Friday evening, Professor Sanford gave an informal dinner to the guests in attendance. The Saturday morning session was addressed by President G. Stanley Hall, who read a paper on 'Tendencies and Dangers in Experimental Psychology,' which was followed by an interesting discussion, led by Professor E. B. Titchener. Dr. J. P. Hylan followed, and Professor Titchener and President Hall again spoke by way of reply to criticisms. After the discussion the psychologists repaired in a body to the physical laboratory where Professor Arthur G. Webster gave a demonstration of a new apparatus for the measurement of the absolute intensity of tone. President and Mrs. Hall received the members for luncheon at the President's house, after which the closing meeting was held to hear a paper by Professor I. Madison Bentley on 'Tonal Analysis,' followed by a demonstration in the laboratory. After a vote of thanks to the authorities of Clark University and in particular to President Hall, Professor Sanford and Librarian Wilson, the meeting adjourned and the guests were given an opportunity of inspecting the laboratories and the library of the university. It was agreed that the next meeting should be held in the spring of 1906 either at the Yale laboratory or at the University of Pennsylvania.

THE Section of Anthropology and Psychology of the New York Academy of Sciences in conjunction with the New York Section of the American Psychological Association met on March 27, 1905, at the Psychological Laboratory of Yale University in response to an invitation of the Philosophical Club and the Anthropological Club of Yale. The psychological laboratory and the anthropological collection at the Peabody Museum were open to visitors throughout the day. There were two sessions, afternoon and evening, and the visitors dined with their hosts at the Graduate Club. The following papers were read: 'Central Anesthesia During Eye Movement,' Raymond Dodge. 'Movements of

Convergence,' Charles H. Judd. 'Radical Differences in the Upper Limit of Audibility,' Frank G. Bruner. 'Variations in Sung Tones,' E. H. Cameron. 'Perception of Linguistic Sounds,' F. L. Wells. 'Mental Growth in Deficient Children,' Naomi Norsworthy. 'Classification of the Senses,' Robert MacDougall. 'Memory Tests of Faces,' Will S. Monroe. 'Transference of Practice,' G. Cutler Fracker. 'Practice and Training,' J. McKeen Cattell. 'Studies in Reading Aloud,' L. A. Weigle. 'Chance,' W. L. Sheldon. 'Types of Monism,' W. P. Montague.

THE Science Hall of Denison University, containing the laboratories of chemistry, geology and biology and the scientific library, was destroyed by fire on the morning of March 30. The files of the *Journal of Comparative Neurology and Psychology* and many valuable books and papers were lost.

DR. ROBERT M. YERKES, of the department of psychology of Harvard University, has been awarded the Boylston Medical Prize for 1905, the subject of his essay being, 'Auditory-Tactual Reinforcement and Inhibition in the Frog.'

GEORGE V. N. DEARBORN, Ph.D., M.D. (Columbia), has been promoted to the full professorship of physiology in the Tufts College Medical and Dental Schools.

PROFESSOR WILHELM OSTWALD, the eminent physical chemist of Leipzig, will again this year take part in the work of the summer school of the University of California. He has been appointed also on the Harvard faculty under the arrangement recently made by Harvard for an exchange of professors with German universities, and will lecture at Harvard for a half-year.

PROFESSOR WILLIAM JAMES sailed for Greece on March 11, to be gone until June. He will attend the International Congress of Psychology at Rome.

DR. WILLIAM P. MONTAGUE, tutor in philosophy in Columbia University, has been appointed instructor in the same university.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

IS SUBJECTIVE IDEALISM A NECESSARY POINT OF VIEW FOR PSYCHOLOGY?¹

'THE world is my idea.' These words, which form the opening sentence to Schopenhauer's 'World as Will and Idea,' may be taken to express with literal exactness the speculative attitude of the psychology of to-day towards reality. This attitude of subjective idealism has been inherited through a long and highly reputable line of philosophic descent. It meets us at the beginning of modern philosophy in Descartes's famous *cogito ergo sum*; it finds a more complete expression in Berkeley's dictum that all *esse* is *percipi*, but attains its most suitable formulation for the purposes of psychology in the sceptical analysis of David Hume, who, discarding as fictions the *res extensae* and *res cogitantes* of his predecessors, declared the mind, and the known universe as a whole, to be merely a 'bundle of perceptions'.

It is safe to say that the psychology of to-day has not gone much beyond this standpoint of the great English empiricist. Rejecting the soul as a metaphysical superstition, and affirming the knowledge of an extra-mental world to be mediate, and hence uncertain, it rests content to remain within the circle of its own ideas, except perchance when it now and then strays into the realm of physiology, or is lured away into the attractive but uncertain domain of the unconscious. In general, however, it asserts that the limits of the ego can not be transcended; that reality is what the subject makes it, and that without this making the external is, for all we know, non-existent.

It is an extremely fascinating doctrine, this radical subjectivism, which becomes solipsism when interpreted in terms of the intellect, and pragmatism when formulated in the categories of the will. The doctrine seems so self-evident, it is so clear and convincing, that it is apt to be accepted without question. Therefore, even to hint at the possibility of its untruth may appear rash. The present discussion, however, ventures to raise the question as to whether its

¹This paper was read before the North Central Section of the American Psychological Association, at Chicago, November 26, 1904.

validity may not legitimately be doubted, and whether modern empirical psychology is obliged to assume this point of view at the only possible theoretical interpretation of reality.

We can best answer this query by reviewing the chief arguments that have induced psychology to accept as certain the theory that known reality is purely subjective. These arguments fall under the general head of the relativity of sensation, and rest on the assumption that the only certain knowledge is that which is direct and immediate. The ancients were impressed with this thought, and from the days of Protagoras and Aristippus down to those of Ænesidemus and Sextus Empiricus felt the force of the doctrine of *homo mensura*. The senses constantly deceive us, and do not certainly point to a stable externality; hence only of the subjective states can reality be unreservedly affirmed. To this argument modern psychology has added another, which rests on the hypothesis that all our conscious states are physiologically conditioned. There is no psychosis without a neurosis. The external stimulus (standing for the extra-mental object) becomes a conscious fact only by exciting the end organs of sensation, traversing the afferent nerves, and producing a change in the cerebral cortex. To suppose that a process so mediated can reveal to us an independent reality, we are told, is sheer nonsense. We must reject the world of the naïve realist, and admit that all we can know are elements of our own consciousness.

The physiological argument is excellently and briefly stated by Professor Strong as follows: "The physiological argument takes its departure from the fact that every perception is correlated with a perceptual brain event, which latter is a fairly remote effect of the action of the perceived object on the senses; and argues from this that it is impossible the knowledge of the extra-bodily object should be immediate. It points, moreover, to the account of the constitution of the object given by physical science, according to which color and other secondary qualities are in the object something entirely different from what they are in the mind."

This is the argument, and in effect the only one by which subjective idealism attempts to set forth and coordinate its facts. I say that it is the only argument, because other reasons given to substantiate the view-point of solipsism are in the nature merely of supposedly self-evident postulates, not in any sense demonstration or proof. On the other hand, the arguments from the relativity and mediate nature of sensation are not adequate to reach the conclusions which they aim to establish, for they are incapable of proving positively their thesis. All they accomplish is to discredit the view of naïve, uncritical realism, but to show that this view is un-

satisfactory is by no means to prove that subjective idealism is true. As a positive proof, the entire argument is a failure, for the simple reason that it can establish the relativity of our perceptions only by holding that among these there are certain factors that are not relative. At every step it assumes in some instances to be true that which in general it is trying to prove false. The fallacy here contained I have endeavored elsewhere² at some length to point out, and shall not attempt within the limits of this paper to review it. I will simply repeat that the argument from the relativity of perception to subjective idealism fails as a positive proof, because it assumes that we possess an absolute knowledge, immediate and direct, of certain experiences in order to prove that other, and indeed all, experiences of exactly the same nature are relative, mediate, and subjective. So it happens that if the premise be true the conclusion must of necessity be false, while the truth of the conclusion establishes the falsity of the premises by which the very conclusion is reached.

This, then, is where the argument from relativity leaves us. We find it sufficient to discredit the assumptions of the plain man, but insufficient to construct for itself a view. Subjective idealism, if it hopes to establish its contention, must do so on grounds other than negative. This it attempts to do by the assertion that we can know only ideas. Translated into terms of solipsism this statement reads, I can know only my own conscious states. This is the very citadel of the idealistic faith, and is generally considered impregnable. In regard to it Schopenhauer has remarked that solipsism can not be proved false, but that the practical man who seriously holds to such an hypothesis is a fit subject for the mad-house. The correct position, however, I believe to be the opposite. I can see no madness in a person holding theoretically, or even practically, the position of solipsism. It means a radical but consistent interpretation of experience in terms of the new idea, and conduct for this reason should be no different from the point of view of the subjective idealist than from that of the uncritical realist. The former would recognize among his ideas certain mental states that were relatively unstable and subject to his voluntary control, while there would be others unyielding and beyond his power to change or direct. The approaching train, although merely his idea, would still be a fact capable of causing destruction to another idea, or set of ideas, his physical body. In this purely mental world would be subjective and objective elements. The solipsist would find it necessary to relate these elements in a proper coordination and subordi-

² *Philosophical Review*, March, 1902, in an article on 'The Common-Sense View of Reality.'

nation, and he thus would act with a due regard for himself and others. It seems to me that the objection of practicability urged against subjective idealism is based upon a misunderstanding of the scope and meaning of the doctrine. It is not for this reason that it must be set aside, but rather because when rigidly interpreted it leads to a self-contradiction far more fatal than that which confronts the realist. This statement to be justified must be examined further.

The assertion that I can know only my ideas may mean one or both of two things, namely: I can have as an object of direct, intuitive knowledge only my past conscious states; or that, in any mental state I may possess, my knowledge is limited to a content which is itself a part of that mental state. Let us look at the latter consideration first. For example, suppose I make the explicit or implicit judgment, this object is a book; the subjective idealist would assert without hesitation that the book of my experience is a purely subjective affair, an ideal element in the sum total of the conscious moment. There may be an external reality corresponding to my experience of book, but of that I can have no knowledge.

The first objection which I believe may be brought legitimately against this assertion is that the content of a total state of consciousness can not itself be ideal, paradoxical as this statement may seem. The content is not a part of the conscious state, as the branches are a part of the tree, or the sun a part of the universe. The content is of a different order and nature. If the content were in the ordinary sense ideal, mark what would follow. This content, as ideal, must likewise have an object, for we know of no consciousness devoid of content, nor can we imagine any. But carrying out our assertion, that we can know only ideas, we would be forced to admit that this content of the content would itself have a content, also ideal, and so on to infinity.

Let us look at the matter from a slightly different point of view. Every complex state of consciousness ordinarily is held to be made up of more simple psychic elements, namely, sensations and images. It is these, according to the doctrine of idealism, that the complex state of consciousness knows, and not an extra-mental reality corresponding to them. These are the objects of our immediate knowledge, which are present as elements in the complex noetic state. Should we say, to avoid the difficulty of the infinite regress pointed out above, that these elements do not know but are known, we plunge ourselves into another equally great difficulty; for how can we then explain the process by which a combination of non-noetic states form a complex conscious state capable of knowledge? So we are confronted with a dilemma in both cases. If we assert that the com-

plex conscious state has simply conscious states as objects of knowledge, it would seem to follow that as conscious they must be conscious of something, and so on *ad infinitum*. If, however, we consider them non-noetic elements of consciousness, we are forced to raise the question as to how their combination can yield a complex noetic state.

But I am quite sure that this entire argument will appear to many as a quibble that can easily be set aside by the assertion that the noetic state has been illegitimately divided into subject and object, knower and known. Knowledge-of-book is one total complex in which the knowledge and the book are separated only by a false abstraction. And this I am quite willing to grant. The immediate state of consciousness is a complete unit and there can be no artificial separation between knowledge-of-book and book: there is no knowledge without book and equally there is no book without knowledge. Book in this sense is not something that I know, so much as a state of consciousness through which I know. If this is a true analysis, however, we can not say that we know ideas, but that we know by means of ideas, or that all knowledge is ideal, an assertion of a truism which no one can dispute. But in *this* state of knowledge there is an intention which ascribes an extra-mental reality to every noetic psychosis. It is that intention which sets up an object non-ideal, or at least extra-ideal. If the intention can not realize itself knowledge is false, for it does not reach its object. To assume that we really know we must believe the intention is capable of realizing itself. It is this intention that gives an object to our knowledge, and this very intention asserts the extra-ideal character of that which it intends. If there is nothing to which the intention can refer, then all knowledge is an illusion. We can not know that we have a mental state even; which seemingly subjective knowledge is, as will be shown later, in the moment of knowing a fact of extra-mental reference.

But the problem may be approached from still another standpoint. To do this we may again go back to our consciousness of book, concerning which, as has already been said, we are told by the idealist that the book, and hence all its qualities, are mere determinations of my present conscious state. I reply that if this is so, I can never know book; nay more, I can never know even its most subjective quality, color; for the color is not merely the determination of my present conscious state. It exists as color only because my present state of consciousness is linked with past experiences. Take away all reference to that which transcends the present moment (and all else in extra-mental), and the content of my experience vanishes. Doubtless something would remain, but what that some-

thing would be we can only surmise; it certainly would not be color; it clearly would not be a judgment in regard to an experience; no, not even a sensation, for a sensation is intellectual and demands more than the immediate experience for its reality. Even the animal so low down the scale of mental life that it possesses no more complex a conscious state than 'thing-a-me-bob-again,' to use an expression borrowed from James, has in that experience transcended the immediacy of the conscious now. And here we come again to the essence of the whole difficulty. Any intellectual state, whatever it may be, depends for its validity on a something which transcends itself. The very act of knowing affirms the extra-mental, and immediate knowledge does not exist, at least as far as human beings are concerned. If we possessed this immediate knowledge we should not know it. All our conscious processes must be mediate. To criticise knowledge because it is mediate is to deny the possibility of any certainty whatsoever. An immediate cognition is a contradiction. It can not even arrive at *cogito*. This was the great discovery of Descartes, hinted at before in Anselm's much-abused ontological argument, namely, that knowledge, to be certain, must transcend itself, and that intellectual certainty posits something beyond the state which expresses the certainty.

But some one may urge that this extra-mental reference that knowledge demands is a reference from one conscious experience to another, and therefore a reference which does not transcend the consciousness of the individual. This brings us back from the second meaning of the proposition to the first, namely, that we can know only our past mental states; an assertion which by implication is contained in that part of the proposition already discussed; for, as we have already seen, knowledge of the present state demands as its warrant a knowledge of past experiences. Thus these two meanings in the assertion of subjective idealism fall under one head in the last analysis. The first proposition, in the light of what has already been said, can be examined briefly.

It must be remembered that the past conscious experience as such no longer exists. Our knowledge of it is a mediate one, as indirect and remote in many ways as the knowledge of a physical fact, and it is as truly extra-mental as is the spatial universe. Any argument which may be applied to prove the unreality of the external world may be used to prove the unreality of past experience. It is the source of deception and illusion quite as much as is the world outside. The latter is external to us in space, the former, however, in time. If we doubt the existence of the one we can legitimately doubt the existence of the other as well, and the only reality of which we then can be certain in the sense that subjective idealism

demands is a reality of the immediate moment. Regarding this, however, as has already been pointed out, no assertion can be made which does not transcend its immediacy; in other words, all knowledge, even of the most rudimentary type, must on this assertion cease. If subjective idealism were true, no one could make the assertion. Indeed, the mind would be that bundle of conscious elements that Hume conceived, but the bundle would have no bond of connection between its various parts, mental life would have neither continuity nor meaning; it would in fact be nothing at all that we can conceive, a point of consciousness without relation to past or future. To this psychic atomism does solipsism, when rigidly interpreted, inevitably lead. Such a doctrine can not be successfully refuted, for it offers no point of attack. Its mere statement is an absurdity.

If the above analysis be correct, we are forced to the conclusion that, while naïve realism contains contradictions, it can not so easily be set aside as ordinarily supposed. The plain man is often accused of views that he does not possess, and though his suppositions in regard to reality may be stated to his disadvantage, it does not follow that by plunging him into difficulties his critics have removed all difficulties from their path. Subjective idealism can not establish its position by negative criticism. Its positive assertions have been shown to be full of contradictions, and are untenable. But if both naïve realism and subjective idealism prove incapable of giving us a true knowledge, two roads to reality are left open: one by means of a critical realism, and the other by means of an absolute idealism. The merits of these two views it is not my purpose here to discuss. I will simply add in conclusion that many of the difficulties which subjective idealism encounters confront absolute idealism as well.

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LOGICAL PROBLEMS, OLD AND NEW

THE up-to-date fashion of studying the nature of judgment is the most liberal one conceivable, basing apparently on Mill's conception of logic as the entire theory of the ascertainment of reasoned or inferred truth. By an easy extension in the scope of 'ascertainment' everything which in any way contributes to make a given meaning what it is comes in for a due share of consideration. The structure and functions of the human organism, appetites, feelings, the historical setting of the particular judgment-act, and the assertion embodied in this act are all reckoned with. Some

investigators among the Germans go so far as to regard the need and methods of communicating assertions as a proper theme of logical study,—an extreme view whose chief use is to show how far afield men nowadays hunt in quest of facts relative to logical issues.

The new tendency justly claims to be the outgrowth of scientific methods and results. The judgment, for instance, is investigated not merely in the light of what is asserted in it, but quite as much with reference to all those circumstances which an observer may find connected with its rise and function. No longer is the appeal to the introspection of the judging individual enough; this latter party must be watched in the act of thinking, his conduct must be described and later compared with his own assertions. Such a study of function involves an inquiry into the aim and motive of judging. Here again the patient's own remarks and intentions do not wholly determine the diagnosis of the doctors of philosophy; unbiased observations made by trained observers are likewise taken into account. Most important, however, is the fact that the center of interest remains in every case the solution of this question, how does the individual *M* come to judge that *A* is *B*? What makes him think *as* he does, *when* he does, and *for the purpose* he does?

Putting the question thus shows up the radical difference between logics old and logics new. These latter do not study the methods of argument, the forms of syllogism, and the implications of accepted meanings. Following the verdict of Mill once more, the latter-day logician finds in Aristotelianism a formal logic whose end and aim gained by the observance of logical precepts, is not the truth, but merely consistency. For this modern thinker such a study is unprofitable in every sense. Now inasmuch as many men have convinced themselves that whatever is unprofitable is thereby false, and have argued that necessary connection, consistency, identity, and all the other conceptions so vital to scholastic thinking are nothing save ideal constructions or ways men have chosen to think in order to gain their ends, a comparison of old logic with new may help us to see the import of this conviction. The startling assertions made of late may best be understood and estimated after we have found what problems have been studied.

The new logic has often been heralded as the successor of the elder one, as if it really displaced this latter by refuting all the supposed 'logical forms' discovered both by Aristotle and by the modern mathematicians. But I have been impressed by the fact that the different problems handled by the old school and the new one prevent sweeping condemnations. There are other reasons for checking the ardent nihilism of certain freshly issued theories, but

I shall discuss here only the objection which bases upon the heterogeneity of the subject-matters of the respective logics.

The most cursory examination of what is vaguely called a judgment shows a twofold problem; the judgment-act must be studied as an event taking place under definite psychophysical conditions, while, on the other hand, the meaning asserted in this act must be investigated with reference to its connection with other meanings. We need not struggle with metaphysical difficulties in order to see that the event of judging is determined by many and various things, such as the individual peculiarities of the agent, the field of his momentary attention, his feelings, desires and so on. All his previous experiences color in some way the present act and its asserted 'content.' Hence the assertion, the willed meaning thought and perhaps uttered, is not detachable from its birthplace and its forebears. What is judged 'to be the case' is qualified by all the determinants of the whole present situation. And so one is tempted to infer that the *grounds* for so judging are just these determinants.

But an inspection of a concrete case reveals a subtle confusion. Let us suppose that some need arose for me to find out what the sun is composed of. Consciousness of this need somehow holds my attention to various 'relevant' facts. The temperature of the orb, its weight, the disturbances on its surface, and so on are all thought of, and lead me to think that a body presenting such peculiarities 'must be' gaseous. What leads me to judge that the sun is gaseous? Of course, the need for *some* explanation leads me to judge something; but this need is not the reason why the sun is gaseous. It seems like a travesty upon earnest thinking to perpetrate such platitudes, yet the tendency of the times warrants the commonest of commonplaces. I admit freely that the recently advanced refutations of dualism are sound, but I fail to see how they are pertinent to the logical problem. Let us grant with the humanists that a one-to-one correspondence of 'real objective' with 'real subjective' is absurd, and that the psychical is impossibly a 'reproduction' of an objective archetype. Have we not still the problem of *reference* awaiting solution? In every judgment there is a reference to a 'state of affairs' which is, in its very significance, not qualified by the special conditions which bring about and determine that particular judgment-act and the 'interpretation' embodied therein. What every man, cave-dweller or humanist, *means*, when he says something, is that 'this or that is the case'; and even if some more enlightened friend could convince him that his judgment was really only an ideal construction fashioned by himself alone in order to fulfill some desire, his reply would be, 'Well, I *mean* that what I said is true regardless of all you say.'

Accepting the modern theory that the 'states of affairs' referred to in every judgment are only meaning-complexes, ideal constructions, the same difficulty confronts us as of old. For the meanings in such complexes are what they are only when their reference-objects are accepted with them. Is it not clear that the 'sun' of which I speak and about which I judge is 'a bright spot overhead,' 'a body at a great distance from me,' or 'the center of our planetary system'? And does not this preclude my thinking of 'sun' as a mere idea, a hypothesis, a habit of interpreting experience? Were I to find nothing but such characteristics in that which I mean by 'sun,' I could not say a single thing about it which I now do. That which is a bright spot overhead or the center of our planetary system can not be a psychical state. In short, the very meaning of the idea is 'that which is not an idea.' The curious thing is that nearly all modern logicians fail to see just this point; that all there is to a thought, idea or belief, *as such*, is what a clumsy psychology naïvely calls the 'content,' and that this 'content,' instead of being 'in' the psychical state, as the barbarous terminology might seem to indicate, is *just what we think it to be*. Indeed, this is what we call the 'content.'

The reason for the rejection of the old logic by the new lies in this latter's hopeless confusion of the judgment-act with the willed meaning. There are three utterly distinct sets of relations to be studied: (1) The relations of one meaning to another; (2) the relations of a meaning to its own origin; and (3) the relations of a meaning to the origin of another meaning. The second and third sets are investigated by the new logic. They form a perfectly legitimate object of inquiry, probably capable, under sane treatment, of yielding us a vast fund of new and useful facts. But, in order to investigate them properly the scientist is often forced to abstract from the intended meanings; that is, he thinks of these latter as 'phenomena' in the mental life and handles them solely as occurrences. What wonder, then, that, finding the needs and desires of men direct their thinking, he concludes that *what* is judged to be the case is 'caused' by human will! The old logic, on the other hand, confines itself to the study of certain typical relations existing between the various 'things-we-mean.' It can not hope to explain how we come to think about just the things we do at just the time we do. Nor can it aspire to explain 'will,' 'psychism' and the like, save in so far as the way in which meanings relate gives some general indication of the nature of the thinking process. In one sense, 'mere consistency' is here studied, but not as if it were, as Mill and others think, something different and apart from the 'truth.'

In this connection another disaster has been brought about by modern psychology; old-time logic is popularly labeled 'the science of the equation of concepts' or 'the science of equivalent expressions,' but usually in such a way as to make one think that *what* the logician compares are the psychical states, as some 'condition of mind,' instead of the intended meanings, which are not ideas nor feelings nor volition. A discussion of this error can not find place here. Enough to say, though, that the relations of my 'mental states' to one another are *toto cælo* different from the relations of the things I 'think about' (while in those states) to one another.

There are, then, at least three distinct problems. Thus far no evidence is forthcoming whereby any one of them may be reduced to the terms and conditions of either or both of the others. Unless, carried away by the wish to find a smooth philosophy, we must content ourselves with special studies. And this forbids sweeping condemnation of other lines of investigation. It is unsafe to say much more than this as yet. Old-fashioned logic is being taken up by mathematicians, and expanded far beyond its scholastic form; as a science of correction it is still active. Merely because it can not do duty as a metaphysic, a theory of ethics and a biology, is hardly an honest reason for hooting it out of court. Substantially the same charge may be brought against its scoffer; genetic logic hardly helps us to think better, any more than it can explain the 'origins' of logical consistency or can derive what I will to mean from the conditions which lead me to desire 'things.'

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DISCUSSION

IS RADICAL EMPIRICISM SOLIPSISTIC?

IF all the criticisms which the humanistic *Weltauschauung* is receiving were as *sachgemäß* as Mr. Bode's in this JOURNAL for March 2, the truth of the matter would more rapidly clear up. Not only is it excellently well written, but it brings its own point of view out clearly, and admits of a perfectly straight reply.

The argument (unless I fail to catch it) can be expressed as follows:

If a series of experiences be supposed, no one of which is endowed immediately with the self-transcendent function of reference to a reality beyond itself, no motive will occur within the series for supposing anything beyond it to exist. It will remain subjective, and contentedly subjective, both as a whole and in its several parts.

Radical empiricism, trying, as it does, to account for objective knowledge by means of such a series, egregiously fails. It can not explain how the notion of a physical order, as distinguished from a subjectively biographical order, of experiences, ever arose.

It pretends to explain the notion of a physical order, but does so by playing fast and loose with the concept of objective reference. On the one hand, it denies that such reference implies self-transcendency on the part of any one experience; on the other hand, it claims that experiences *point*. But, critically considered, there can be no pointing unless self-transcendency be also allowed. The conjunctive function of pointing, as I have assumed it, is, according to my critic, vitiated by the fallacy of attaching a bilateral relation to a term *a quo*, as if it could stick out substantively and maintain itself in existence in advance of the term *ad quem* which is equally required for it to be a concretely experienced fact. If the relation be made concrete, the term *ad quem* is involved, which would mean (if I succeed in apprehending Mr. Bode rightly) that this latter term, although not empirically there, is yet *noetically* there, in advance—in other words it would mean that any experience that ‘points’ must already have transcended itself, in the ordinary ‘epistemological’ sense of the word transcend.

Something like this, if I understand Mr. Bode’s text, is the upshot of his state of mind. It is a reasonable sounding state of mind, but it is exactly the state of mind which radical empiricism, by its doctrine of the reality of conjunctive relations, seeks to dispel. I very much fear—so difficult does mutual understanding seem in these exalted regions—that my able critic has failed to understand that doctrine as it is meant to be understood. I suspect that he performs on all these conjunctive relations (of which the aforesaid ‘pointing’ is only one) the usual rationalistic act of substitution—he takes them not as they are given in their first intention, as parts constitutive of experience’s living flow, but only as they appear in retrospect, each fixed as a determinate object of conception, static, therefore, and contained within itself.

Against this rationalistic tendency to treat experience as chopped up into discontinuous static objects, radical empiricism protests. It insists on taking conjunctions at their ‘face-value,’ just as they come. Consider, for example, such conjunctions as ‘and,’ ‘with,’ ‘near,’ ‘plus,’ ‘towards.’ While we live in such conjunctions our state is one of *transition* in the most literal sense. We are expectant of a ‘more’ to come, and before the more *has* come, the transition, nevertheless, is directed *towards* it. I fail otherwise to see how, if one kind of more comes, there should be satisfaction and feeling of ful-

fillment; but disappointment if the more comes in another shape. One more will continue, another more will arrest or deflect the direction, in which our experience is moving even now. We can not, it is true, *name* our different living 'ands' or 'withs' except by naming the different terms towards which they are moving us, but we *live* their specifications and differences before those terms explicitly arrive. Thus, though the various 'ands' are all bilateral relations, each requiring a term *ad quem* to define it when viewed in retrospect and articulately conceived, yet in its living moment any one of them may be treated as if it 'stuck out' from its term *a quo* and pointed in a special direction, much as a compass-needle (to use Mr. Bode's excellent simile) points at the pole, even though it stirs not from its box.

In Professor Höffding's massive little article in a recent number of this JOURNAL,¹ he quotes a saying of Kierkegaard's to the effect that we live forwards, but we understand backwards. Understanding backwards is, it must be confessed, a very frequent weakness of philosophers, both of the rationalistic and of the ordinary empiricist type. Radical empiricism alone insists on understanding forwards also, and refuses to substitute static concepts of the understanding for transitions in our moving life. A logic similar to that which my critic seems to employ here should, it seems to me, forbid him to say that our present is, while present, directed towards our future, or that any physical movement can have direction until its goal is actually reached.

At this point does it not seem as if the quarrel about self-transcendency in knowledge might drop? Is it not a purely verbal dispute? Call it self-transcendency or call it pointing, whichever you like—it makes no difference so long as real transitions towards real goals are admitted as things given *in* experience, and among experience's most indefeasible parts. Radical empiricism, unable to close its eyes to the transitions caught *in actu*, accounts for the self-transcendency or the pointing (whichever you may call it) as a process that occurs within experience, as an empirically mediated thing of which a perfectly definite description can be given. 'Epistemology,' on the other hand, denies this; and pretends that the self-transcendency is unmediated or, if mediated, then mediated in a super-empirical world. To justify this pretension, epistemology has first to transform all our conjunctions into static objects, and this, I submit, is an absolutely arbitrary act. But in spite of Mr. Bode's maltreatment of conjunctions, as I understand them—and as I understand him—I believe that at bottom we are fighting for nothing dif-

¹ Vol. II., No. 4, pp. 85-92.

ferent, but are both defending the same continuities of experience in different forms of words.

There are other criticisms in the article in question, but, as this seems the most vital one, I will for the present, at any rate, leave them untouched.

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REVIEWS AND ABSTRACTS OF LITERATURE

University of California Publications. Philosophy. Volume I. Studies in Philosophy prepared in Commemoration of the Seventieth Birthday of Professor George Holmes Howison. Berkeley. The University Press. November 29, 1904.

This volume is beautifully executed, and its essays are all of solid merit. Dealing as they do with diverse topics, it will be best to take up each in turn very briefly.

The first paper is entitled *The Summum Bonum*, by Professor McGilvary. "Before discussing the question of the nature of the highest good we must first ascertain what is meant by 'good' in the positive degree." But 'good' is an ambiguous term. Sometimes it means the 'pleasant'; sometimes, the 'desired.' Sometimes, the desirable in the sense of 'that which we should desire if all the consequences of all the different lines of conduct open to us were actually exercising on us an impulsive force proportioned to the desires or aversions which they would excite if actually experienced' (what the author calls the 'teleologically desirable'). Sometimes it means the desirable, not in the sense that we now do, or ever will desire it, but in the sense that we 'feel that we *should* desire it' (the 'categorically desirable'). Besides all these meanings, the good may mean, 'not the obligation to *desire* the object, but the obligation to *attain* the object without reference to desire' (the 'categorically obligatory').

"Having thus discovered so many meanings for the term 'good,' we should be prepared to find as many meanings for the term 'highest good' or *summum bonum*. And this is exactly what we do find." Along with this conception of the highest good there goes a sense of obligation to strive to attain it, the 'good' and the 'obligatory' being identical only in the last of the uses of the term above enumerated.

'We are now prepared to take up the question whether there is any *reasonable highest good* for men at large.' From the individualistic point of view none can be asserted. But from the point of view of the social nature of the individual 'all normal men do have at heart the good of some other beings than themselves,' and this common good becomes identified with the individual good. In this sense only is there a highest good.

The second paper, by Professor Mezes is a discussion of *The Essentials of Human Faculty*. It is a statement of the principal reasons for the human ascendancy, the chief of which on the mental side is the 'ability to decide among alternatives.'

He distinguishes three general types of novel action. 'The first is action by trial and error, . . . the second, action that is purposive but not chosen, the third, action that is purposive and chosen.' Animals share with man in the capacity for the first two kinds of action. Man alone is capable of the remaining type.

'Animals ask single or simple questions, but do not ask double, complex, or general questions.' 'They *see* fitting means, but do not *seek* them; and seeking means implies the general question.' 'In brief, animals are capable of asking questions which do not involve the presence of several alternatives in their minds at once, but appear to be quite incapable of asking questions which do involve such mental alternatives.' 'The perception of relations is the distinctive human power.'

He connects the evolution of this power in a very interesting way with the evolution of the hand and of the erect stature. 'Volitional effort,' he says, 'which makes possible choice, our original differentia, turns out to be the psychic correspondent, gradually preserved and organized, of the physical strains and stresses incident to erectness.' Erectness is 'the matrix from which issued the germ of volitional effort.'

One questionable position is that in which the author says that effort is 'an additional weight the self can drop into the ideal scale prior to decision, an increment of force that may well, in the case of difficult actions, be used so to reinforce muscular energy as to render possible what muscular energy unaided could never have accomplished.' This appears to the reviewer to labor under the same limitations as Professor James's theory of the will upon which it is based—to be, in fact, a bit of antiquated faculty psychology in the midst of an otherwise illuminating organic and functional statement.

The third paper, on *Some Scientific Apologies for Evil*, by Professor Stratton, rejects the current 'attempts to justify moral evil by an appeal to natural science.' The 'law of contrast,' according to which evil is necessary as a foil or background for the good, is rejected on the ground that 'the law of contrast does not demand that actual evil should coexist with the good.' 'The mere idea of evil is a sufficient contrast,' and 'the idea or thought of evil is not itself an evil.' 'It seems as if the thought of moral evil could have been suggested perhaps even by the behavior of animals.' In any case, 'it does not appear that the evil which we actually find is indispensable to our consciousness of the good.'

Nor is evil simply good in the making, or 'lower stages of development when viewed from above.' A vigorous tree, a beautiful bird, an intelligent horse does not seem evil simply because it is lower in the evolutionary scale. A child does not seem evil because it is immature. There is no identity between the undeveloped and the bad. Professor Stratton even goes so far as to suggest that moral evolution is possible without evil, and says that we must return to the conviction 'that the truest revelation of God's character comes, not through nature or natural evolution, but by some inner light, some inner voice.' The argument is not convincing.

Professor Rieber in the fourth paper, on *Pragmatism and the A priori*,

has stated clearly one or two important principles of pragmatism and misstated others; or, at least, the reviewer thinks that the pragmatists themselves will regard them as misstatements. There is great need just at this time of a clear definition of the issues here involved.

The author's main contention is for an *a priori*, eternal or absolute element in experience, and especially in knowledge. 'Not what an idea has come from, nor what it is just now discovered to be, nor what it is going to *do* by and by, but what it eternally *is*, must furnish us with our deepest insight into the world of reality.' Therefore he objects to the appeal to evolution upon which he conceives the pragmatist to rest his case. 'Mind, which the pragmatist puts last in the evolutionary series, is in the profoundest sense of the word first.' Hence the necessity of 'rising above the temporal order to a timeless point of view.' Likewise he objects to pragmatism as a pure empiricism, because he conceives that 'the pragmatist announces at the outset that thought, being a function in the present situation, exhausts its entire meaning in that situation,' whereas in truth, he says, 'we do have knowledge that is logically prior to experience,' which 'is itself the condition of experience, and therefore can not be derived from experience.' 'What meaning,' he asks, 'can we possibly attach to the pragmatist's conception of reality, that, as a whole, changes always? If he does not wish us to take him literally and after all intends to provide for some sort of permanence, how can he give his world of fluent inherited ideas any stability of meaning?'

In reply to this it might be asked what is meant by permanence and by change. If idealism insists on a permanent element in a static sense, then pragmatism is not idealistic, since it maintains that permanence means permanence in the midst of change, a moving equilibrium in which the stability of a gyroscope or the life of an organism may serve as the type. But is idealism necessarily synonymous with absolutism?

A similar line of argument would show that pragmatism is not necessarily identified with a pure empiricism, as the author thinks it is. He says: 'The path along which empirical thought moves can not be marked out except by reference to some fixed point of view that lies outside of that path.' This the pragmatist denies. A 'fixed' point of view, he says, is no point of view at all. A point of view is a developing thing. It is fixed, that is, it is taken as relatively fixed, only for the given situation, but is itself constantly undergoing evolution with the development of experience. This is empiricism, but it is not mere empiricism; it is not sheer relativism. As the author himself puts it in his exposition of the pragmatist's position, 'Even if all is flux and our conceptions of the true, the beautiful and the right are always changing, we need not despair. We must not think that we are thereafter consigned hopelessly to the quagmire of uncertainty and error. The discovery that nothing is stable need not paralyze action.'

The author further objects that 'pragmatism emphasizes effects of action as tests of validity, but does not furnish a criterion by means of which we may distinguish good from bad effects.' The reply might be made that the pragmatist finds the criterion in the social implications of

the consciousness of the individual. The pragmatist says, 'Our thoughts are born of our needs.' But in saying that he does not deny that these needs themselves need to be explained. To explain them is the socio-genetic problem. The pragmatist simply insists on basing his philosophy of life in the most obvious truths of experience and then working out from this as a basis to the consideration of the terminal problems.

The author objects to the 'genetic theory of the judgment,' upon which he says the pragmatist bases his entire logic. 'Aside from being a useful instrument in the struggle for existence,' he says, thought 'has the more important office simply to be true.' 'It is one function of a judgment to be useful, that is, to reach out beyond itself. But its other and most fundamental function is just to be true.' But surely truth is true only under specific conditions. There is no such thing as truth at large or truth in the abstract. And the specification of the conditions always introduces the possibility, nay, the necessity, of elements of utility.

He links what he calls the 'action-theory of thought' of the pragmatist with the James-Lange theory of the emotions. 'We do not act because we think, but we think because we act.' He is unable to see that both are true. He points his criticism with an illustration. 'The light in an electric globe may be said to stand midway between the current that goes in and the current that goes out of the globe. It represents a stage in the process. Now suppose the outgoing current of electricity did some work,—turned a motor, for example. The light then would be in inseparable connection with this activity. We could appropriately speak of it as a function of the action in the motor. The light, however, does not turn the motor, it is a mere attendant phenomenon in the process. Now in the action-theory of thought, the idea occupies an analogous position.' The terms of this illustration show how completely the author has missed the gist of pragmatism. From the standpoint of a strict continuity, light has existence solely in terms of vibrations (or whatever change the physicist regards as the objective counterpart of the experience of light), and in this sense 'light' does play its part in relation to the turning of the motor, at least negatively, in diverting energy that would otherwise be available for turning the motor. It is not a mere 'attendant phenomenon' in the process. The pragmatist is not committed to epiphenomenalism. One of the main contributions of a true pragmatism is to get back of the dualism implied in that theory.

Instead of its being true that pragmatism must 'stand or fall with the Spencerian agnosticism,' it is the case rather that in pragmatism we for the first time see evolution in its true setting. He is the first to take the evolution principle really seriously. Spencer's philosophy, in spite of its pretensions, never really penetrated to the real significance of evolution, as is sufficiently shown, not only by his doctrine of the unknowable, but also, as Professor Royce has recently shown, in his formal statement of the evolution principle itself. Pragmatism is no more bound up with Spencerism than it is with Hegelism.

Finally, the author falls into the error, common to nearly all of the recent critics of pragmatism, of supposing that this doctrine is com-

mitted to subjective idealism and individualism, and therefore that it is 'a protest against every species of ontology.' But identification of the logical with the ontological categories, the notion of a reciprocal determination of thought and reality, does not necessarily imply a denial of the ontological categories; it simply means protest against a certain kind of ontology.

Professor Bakewell, in the fifth paper, defends idealism against pragmatism, which he calls the *Latter-Day Flowing-philosophy*. This philosophy, he says, justly emphasizes 'the universality of the dynamic standpoint, the concrete character of experience, and its inevitable anthropocentric reading. But idealism is not thereby routed; in intellect still is found the organizing principle that makes experience intelligible; but it is intellect conceived as immanent in the process of experience, and not merely transcendent. And, inasmuch as the fixed standard is found in the life of the individual knower, the result is, to use Professor Howison's phrase, personal idealism.' This passage sets forth clearly enough the author's position. A single point will be taken up for criticism.

The true is that which works. The good is that which satisfies. This is pragmatism. But is there anything, the author asks, which might not under conceivable circumstances meet the requirements of this criterion? May we not conceive a situation in which what we now call the false and the evil would give satisfaction because it serves the utilitarian ends of the moment? If so, what becomes of the distinction between the true and the false, the good and the evil?

But is not this as if a carpenter should refuse to use his gauging instrument to mark a straight line because he had heard that parallel lines meet at infinity? No doubt there are circumstances under which it would be right to do what from our present point of view we call lying, stealing, or committing murder, but this admission does not destroy the existence or the validity of the standards which govern my present conduct. The admission of the ultimately hedonistic and utilitarian character of our criteria does not necessarily result in subjectivism and scepticism. Pragmatism is not mere individualism.

Our desires and our needs are socially determined, have a social content, and a social validity. Truth and utility have a social stability. And this sort of stability is permanent and trustworthy because an organic expression of the social character of the consciousness of the individual. Here is a genuine and practicable standard because it represents a dynamic equilibrium or balance of the actual conditions within which the individual must work out his freedom. It is no spurious and abstract validity, no pseudo-stasis of a transcendental sort, won at the price of denying all the rich diversity of concrete experience. It is in terms of experience, as the author himself says, that the standard must be stated, and this means, as he does not seem fully to realize, that the standard can not be 'fixed,' and that it is as much social as it is individual, that it is only by being social that it can be truly individual.

The sixth paper, by Professor Henderson, on *Some Problems in Evolution and Education*, is a valuable one. 'Two conceptions, springing from

the study of the process of organic evolution, are especially significant from their bearing on the theory of education.' These are the significance of infancy, and the opinion that acquired characters are not inherited.

The prolongation of infancy is to secure increased plasticity in the individual organism in order to adapt it in the increasingly variable conditions which accompany the greater complexity of structure in the higher stages of evolution. 'A stage of infancy can have no function except to prepare for unpredictable changes in which the former generation is unable to survive.' Hence the education of the human infant should be 'directed largely to the task of developing an ability that can be used in all emergencies rather than to the formation of specific habits.' Society finds in the helplessness of its infants the freedom that is the parent of progress.

If this is true 'we do not care very much whether there is any inheritance of acquired characters.' 'The more variable the environments the more likely will it be that the habits adapted to one condition will be useless, or positively an encumbrance, later on. Hence we might expect that the evolution of organisms adapted to more and more complex and variable environments, would mean the evolution of the non-inheritance of acquired characters.' The purpose of reproduction is to secure diversity. 'Heredity preserves continuity where reproduction assails it.'

Prolongation of infancy and non-inheritance of acquired characters are thus the methods by which such discontinuity is brought about in evolution as is requisite to insure this diversity of structure and function involved in all progress. And social heredity, or education, is the consciously directed means of transmitting the accumulated wisdom of the race without the blindness and rigidity of physical heredity. The law of conscious selection, fitting the weak to survive, carries evolution to a level higher than the mere blind struggle for existence with the survival of the fittest, which is the law of natural selection.

The seventh paper, on *Philosophy and Science in the Study of Education*, by Principal Burks, points out the looseness in the current phrases, 'Science of Education' and 'Philosophy of Education,' as applied to even the best systematic thought in this field. In the strict sense of these terms, as he defines them, there is no 'science' and no 'philosophy' of education. But he pleads for a more thoroughly rational philosophy of life and conduct as the basis for true educational theory. As he suggestively states the matter, 'education is merely human life under the influence of conditions and stimuli artificially instead of naturally selected. By reason of this intimate correspondence between the educational process and the normal social life of man, the fundamental problems of education are identical with those of life in its larger aspect, and the philosophy of education is nothing less than the philosophy of life.'

The eighth paper, by Professor Lovejoy, on *The Dialectic of Bruno and Spinoza*, is an able exposition and estimate of the contradictory elements which go to make up Spinoza's system. He traces back the contradiction in Spinoza's conception between the unity and the multiplicity, the

transcendence and the immanence, of the divine substance, to a similar dialectic in neo-Platonism and in Bruno. He shows at once the justice and the injustice of the diverse interpretations by Sir Frederick Pollock and Mr. Joachim, on the one hand, who expound Spinoza in a highly idealistic fashion, and of E. Caird and J. Caird, on the other, who fail to recognize the common root of the antitheses inherent in Spinoza's thought, and thus make him out more illogical than he really is. The author's own view is that it is necessary for the proper understanding of this philosopher to keep in mind 'the origin of both sides of the contradiction in a single dialectical ground, and hence the impossibility, for Spinoza, of unequivocally giving up either side, without abandoning his whole method of philosophizing.'

The ninth paper, by Professor Stuart, is entitled *The Logic of Self-realization*. "The notion of the 'concrete universal' in modern philosophy . . . is, first and foremost and in its essence, an ethical conception." The author shows that in the development of the 'explicit ethics of the concrete universal—the theory of Self-realization—the idea of derivation has for the most part been construed in a metaphysical fashion, according to the letter of rationalism, and hence misconstrued—with the result that the ideal of a completely realized self has been understood on the analogy of the rationalist's substance, as a source and origin of particular moral guidance in details.' He, on the other hand, holds 'that the ideal thus understood is as useless for any such practical purpose—for any purpose of ethical theory, that is to say—as the metaphysical concept of the concrete universal is tacitly confessed to be by its expounders for the purposes of factual science.' The true significance of the self-realization principle lies in its consideration as 'essentially an ideal of ethical method, and not a contentual or descriptive ideal from which either the details or the generalities of right conduct are to be extracted.'

Dr. de Laguna in the tenth paper, on *Utility and the Accepted Type*, starts from the common distinction between ethical judgments based upon conformity to the accepted type of what is right and wrong, and judgments based upon utility or the interest or indifference which the agent displays toward the common good. 'How can judgments so pronouncedly different in nature bear the same generic name' ('ethical')? 'The time has passed for answering . . . simply by denying the ethical character of either of the main factors involved.' By a very instructive comparison with similar judgments in the esthetic sphere, the author shows that the 'two classes of moral judgment are allied in a continuous common development.' 'The type-judgment and the act which follows it can not be understood by any abstract analysis that leaves out of account their genetic connection with consideration of utility.' That is, utility and conformity are alike essential as the progressive and the conservative elements in the moral life.

The eleventh paper, by Dr. Dunlap, is entitled *A Theory of the Syllogism*. The ordinary classification of propositions is not exhaustive as regards their forms. He substitutes the classification into simple and complex, the latter being subdivided into specific hypothetical, specific

disjunctive, general hypothetical and general disjunctive. After illustrating what he means by these terms, he shows how they are combined in the syllogism, which he defines as 'an interrelation of two judgments summed up in a third judgment.' His mode of symbolizing the relations of the propositions in the syllogism is in some respects new, and will be of interest to the formal logician.

The twelfth and last paper, by Dr. Overstreet, on *The Basal Principle of Truth-evaluation*, is an attempt to give positive character to the test by inconceivability of the opposite. The first part of the paper is devoted to a restatement of the dialectic of universal scepticism. His own positive conclusion is 'that the truth of any content whatever lies in the ability of that content to maintain itself completely.' 'Truth is an absolute uniformity or self-maintenance of meaning.'

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The Principles of Mathematical Physics. HENRI POINCARÉ. *The Monist*, January, 1905, Vol. XV., No. 1, pp. 1-25.

This article is an address delivered before the St. Louis Congress, translated by Professor Halsted. To review it here, when recourse to either the original or the translation can be had so easily, would not be worth while, did it not contain matter of philosophical interest not made explicit by the author, and yet very *à propos* to the recent frequent discussions of pragmatism. The author's general position is well known to many; yet it may be well to restate this.¹ For him the axioms of geometry are neither synthetic judgments *a priori* nor experimental facts, but rather conventions, definitions. Our choice among them remains free, and is limited only by the necessity of avoiding all contradiction.

The foundation of mechanics is closely similar, yet with a difference. Although the fundamental principles of geometry are conventions set up in studying space, because of experiments in physiology and mechanics, they do not refer to the objects experimented with. The principles of mechanics *do*, however, relate to these objects, and that science must remain experimental. The author views such hypotheses in physical science as that matter is continuous or that it is atomic as indifferent. This ought to be most critically suggestive to him who claims that, corresponding to, *e. g.*, atomic (molecular) formulæ, real atoms must exist. The real aim of the scientist is not to find out whether, *e. g.*, the ether is or is not formed of atoms, but to foresee optical phenomena. The differential equations by which he does this express relations; the former are true if the latter preserve their reality. We may *image* the relation by substituting for the equation some appellation like movement or current, but 'the real objects will remain eternally hidden from us.' If, then, between the members of different sets of images the same relations respectively exist as between the objects, one is free to choose his imagery. The differential equation is then an abstraction presenting the common features of, *e. g.*, periodic phenomena, some of which may be those of motion,

¹ Cf. 'La Science et l'Hypothèse,' Paris, 1903.

but all are not necessarily so. It means simply that between all periodic phenomena there exists a close and abstract relationship which corresponds to a profound reality, and is the consequence of more general principles of energy, of least action, etc.

We find this general position of Poincaré to be very much the same as that taken by Duhem in a recent series of articles.² For the latter 'a physical theory is a system of mathematical propositions, deduced from a small number of principles, which aim to *represent* as simply, as completely and as exactly as possible, an *ensemble* of experimental laws.'

In both positions we discover three implications which are of philosophic interest. The first is that, as we *use* or think these mathematical propositions, it is not only unnecessary, but indeed *impossible*, to present images which shall constitute or be adequate to their meaning. In this there is indicated also the psychological nature of scientific thinking in some fields. It is essentially *symbolic* and *efficient*. Secondly, although in response to the desire to *conceive* how something is possible, some image or series of images may be formed and some appellation, *e. g.*, movement, given, not only are these images inadequate, but it is quite possible, if images be insisted on, to get different sets of them. Accordingly different systems within almost any of the different fields of knowledge may arise, each with as good and no better claims than the others. Thirdly, and in connection with these two, a mathematical proposition (differential equation) may be *effectively* or efficiently used to control and foresee phenomena without any images at all being presented, and, accordingly, without any question as to that *truth* which has been held to consist of a correspondence between them as ideas and real things. Symbolism and pragmatism, then, go here hand in hand. In seeking knowledge in physics and chemistry one may say, indeed, that we are after *not truth, but efficiency, efficient symbols* and their rules-of-the-game-like manipulation, as an instrument of control and foresight. Paradoxically, their use makes a man *able to do*; his general position, his thinking all reality in the likeness of some image, can determine only what he does.

In his present paper Poincaré 'diagnosticates' the case of physics in the crisis through which it is now passing—crisis because of 'Zeeman effects' and radium and 'Brownian movements,' etc., and in so doing he recognizes the above principles.

Mathematical physics, born of celestial mechanics, represented all nature as 'springing' from masses which attracted and repelled each other according to some exponent, not always -2 , but perhaps -5 or -6 (Briot's atoms of ether). It rendered the further service of 'making precise the notion of the physical law as not something static and immutable, but as a differential equation.' The reviewer finds in this origin one reason for the persistent attempts made to image all phenomena in terms of the changes in the configuration of minute hard masses, *i. e.*, for one kind of atomism, a mode of *conceiving* which emphasizes particularly the keeping of the law of identity intact.

² *La théorie physique, son objet, sa structure*, P. Duhem. *Revue de Philosophie*, April, 1904-January, 1905.

But for our author this mode of conceiving is not necessary. He finds that the first crisis arrived when this conception of 'central forces' no longer appeared sufficient. 'One gave up trying to penetrate into the *detail* of the structure of the universe, and was content to take as guides certain *general principles* whose object is to spare us this minute study.' Thus, for example, in a machine in which the initial and final wheelwork is alone visible, and the nature of the internal mechanism is not known, the principle of conservation suffices to determine for us what ratio the couples applied to each wheel must have in order to effect compensation.

Our author mentions six general principles whose application as 'rules of the game' enables us to draw conclusions, whatever may be the invisible mechanism in nature. These have resulted from experiments with objects and refer to these, yet are nevertheless conventions and may not always be found efficient.

They are: (1) the conservation of energy, (2) its degradation, (3) the equality of action and reaction, (4) relativity, (5) the conservation of mass and (6) least action.

To illustrate their application, he says that although 'we know nothing as to what is the ether, how its molecules (?) are disposed, whether they attract or repel each other, we do know that its transmission of optical and electrical perturbations is made conformably with these general principles of mechanics, and that suffices for the establishment of the equations of the electromagnetic field.'

'The hypothesis of central forces contained all the principles,' but now this conception has become a useless support, or rather embarrassment, since it makes the principles partake of its hypothetical character. Enlarged, found in different vestments, consolidated as these principles have been, are they now to crumble away in the presence of radium and Brownian movements, etc.? A second crisis!

Take the principle of Carnot, the only one not an immediate consequence of the hypothesis of central forces; for if to these all physical phenomena were due, then all these should be reversible. But this was not so in nature. Events could not be turned backward without the hands of the Maxwellian demon. At least so it was thought until recently the microscopist saw in the movements of little particles in suspension motion transformed into heat and conversely, and the Carnot principle was imperiled.

Even the principle of relativity, according to which the laws of physical phenomena should be the same whether for an observer fixed or for one carried along in a uniform movement of translation, has been attacked: Take two electrically charged bodies, seemingly at rest; the earth nevertheless carries them; but a charge in motion is a current; we have, therefore, really two currents which attract each other. Measure this attraction, and have we not measured the velocity of the earth absolutely and not relatively?

Again it has been attacked in the very ingenious attempts made to measure the velocity of the earth in relation to the ether, but the results have been negative. To explain this obstinacy the mathematicians have

had to *accumulate* hypotheses, such as that bodies in motion undergo a uniform contraction in the sense of the motion and that in forces those components which are perpendicular to the translation of the earth are reduced. 'The very energy of the defense proves how serious has been the attack' on the principle of relativity.

So, also, has the Newtonian principle of the equality of action and reaction been questioned. It has been held that one electron makes another at a distance vibrate through the mediation of the 'intervening ether.' Evidently the compensation between the action and reaction could not be simultaneous; the perturbation has a finite velocity. If the action and reaction be held to take place between the ether adjacent to the electron and this latter, this is contrary to the principle of Newton, since the projectile here has no mass; it is not matter, but energy. Analogously and experimentally it is possible to get what is termed the 'Maxwell-Bartholdi' pressure of light.

One way out of the difficulty, seemingly, is to suppose the ether attached to some *material* substratum; but this has been experimentally disproved by Fizeau, and Michaelson and Morley. Another is that 'the movements of matter are exactly compensated by those of the ether; but the principle so extended would explain everything since, whatever might be the visible movements, we could always imagine hypothetical movements which compensated them.' But able to explain everything, it permits us to foresee nothing, it becomes inefficient and useless.

In this we again discover Poincaré's recognition of a view-point we have previously emphasized, viz., that a general or universal principle may influence what a man does or wishes to do, but can not make him able to do. The conviction, *e. g.*, that *everything* is energy and that this is conserved, does not always enable one the better to foresee and control phenomena. This can be done at present only by the mathematical symbolization of *experimentally* measurable quantities in the form of an equation. Put in another way, one may say that if a term be raised to a genus it can no longer be used as a species by which to differentiate, yet differentia must be discovered in order to predict and control. We will leave it to the reader to make the application to panpsychism, etc., and return to our author's presentation of the attack on Lavoisier's principle of the conservation of mass.

'The calculations of Abraham and the experiments of Kaufmann have shown that the mechanical mass is null, and that the mass of the electrons, at least of the negative ones, is of exclusively electrodynamic origin; there is, therefore, no mass other than this latter, and this augments with the velocity and even depends on the direction.' 'So-called mechanical masses will vary in accordance with the same laws as the electrodynamic masses. And if no longer a constant mass then there is no longer a center of gravity.' 'And if the coefficient of inertia is not constant can the attracting mass be?' That is the question. We here see the difficulty which has been felt from, say, the time of Maxwell in defining mass crystallized by the shock of recent experimental work.

We now come to the principle of the conservation of energy. This is

'strained' by all the recent work on radioactive bodies. They 'create' incessantly (?) a notable amount of heat. Sir Wm. Ramsay, to be sure, says this store of energy is, however, quite exhaustible, say, in 1,250 years.

But let it be conjectured, by way of explanation, that, *e. g.*, radium is only an intermediary taking up energy and giving it out in divers forms! Then our general principle is saved; but by what an advantageous, convenient, unverifiable and irrefutable explanation! All the objections of future experimenters are answered beforehand; they can not assail the principle. It is intact; but of what *use*? Made general, how inefficient!

'In the presence of this general ruin of the principles, what attitude will mathematical physics take?' First, it is proper to ask if all of this is really true, for all these objections are encountered only among infinitesimals. However, only *experiment* can settle the question, and in the meantime we are to continue our work as if the principles were still uncontested, or, in the face of our doubts, make an effort to save them. We must 'heap up hypotheses,' leaving it to the experimentalists to seek the *crucial* experiment with which to decide between them.

But suppose all such efforts fail, and we can not reconcile the principles with the results of experiment. Shall we try to mend them by a *coup de pousse*, like that one used in accounting for the energy of radium? That is always possible, but with it the principle would cease to be fecund.

Consequently 'it would be necessary to rebuild anew,' to have a third period bearing traces of the second as this did of the first. And in this perhaps it is the kinetic theory of gases which is about to serve as a model for the others. The laws of chance will then make a very great number of elementary facts cooperate for a common end. 'Physical law will then no longer be solely a differential equation, but will take the character of a *statistical law*.' We should, perhaps, likewise have a whole new mechanics where inertia increases with the velocity! Ordinary mechanics would remain a first approximation, true for velocities not too great, and we would still act as if we believed in the principles, as if they were true within these limits. They are too useful to deprive ourselves of them entirely, but they would not be efficient for data though extended universally.

In conclusion, we may repeat the statement of the principles of philosophical interest which the author seems to make use of. These are: Mechanical principles are *conventions* set up because of and referring to objects experimented with. These, as the results of certain other experiments show, are, if not false, at least useless if extended universally. A physical law or theory consists of mathematical equations containing symbols for real relations, and by the manipulation of these equations enables us to predict and to control (scientific symbolism and pragmatism) in an experiment without presenting images (atoms, etc.) for the meaning of these symbols, and as to the structure of objects; such equations apply to changes of state, of quality, etc., as well as to those of position; if images be insisted on, different systems are possible. Physical science is indifferent to truth if this be only the correspondence between images and reality, but rather is concerned with the efficient instruments of manipula-

tion and experimentation, i. e., with symbols, equations and with facts. Only in this way is the use of apparatus made possible. These—symbols, conventional principles, equations, their manipulation—and experiments with these in mind are the aspects and means of knowledge in those fields in which we are most *able to do*. This is pragmatism and not absolutism.

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JOURNALS AND NEW BOOKS

JOURNAL OF COMPARATIVE NEUROLOGY AND PSYCHOLOGY. January, 1905. *On the Areas of the Axis Cylinder and Medullary Sheath as Seen in Sections of the Spinal Nerves of Vertebrates* (pp. 1-16): H. H. DONALDSON and G. W. HOKE. — The areas, in cross section, of the axis cylinder and of the medullary sheath are very nearly equal to each other; and this holds true, with deviations of less than two per cent., of all classes of vertebrates above the Cyclostomes. *On the Number and Relations of the Ganglion Cells and Medullated Nerve Fibers in the Spinal Nerves of Frogs of Different Ages* (pp. 17-56): IRVING HARDESTY. — There are about three times as many cells in the frog's spinal ganglia as fibers in the dorsal roots; there are always more fibers in the combined nerve distal to the ganglion than in the two roots together. Some of this 'distal excess' is accounted for by the bifurcation of fibers, both sensory and motor, which occurs to a limited extent just distal of the ganglion; another known factor, and probably the most important, is the incoming of sympathetic fibers which pass into the ganglion and end there; it is also possible, though not proved, that some of the cells of the ganglia, while sending no fiber inward to the cord, send one outward. The 'distal excess' increases with the age of the frog. *Editorial. Psychology and Neurology* (pp. 57-61): H. HEATH BAWDEN. — There is need for the two sciences that deal with the nervous system to cooperate in investigation and discussion, but this is made difficult by the diverse history and metaphysics of their concepts. When once the energetic conception, applied to both matter and mind, has thoroughly penetrated biology and psychology, it will go far toward removing the difficulty. *The International Commission on Brain Research* (pp. 62-65): G. ELLIOT SMITH. — History of the origin of the Commission, and account of its first meeting in London in May, 1904. *Literary Notices.*

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. January, 1905, Band 37, Heft 1 u. 2. *Quantitative Untersuchungen über die Bleichung des Sehpurpus in monochromatischen Licht* (pp. 1-55): WILHELM TRENDLENBURG. — The curve of the bleaching effect of spectral colors is well-nigh identical with that of the threshold values of these colors in faint light vision and this again identical with the curve of the energy absorbed. Results are in accord with theory that visual purple reenforces faint light vision. *Experi-*

mentelle Beiträge zur Lehre vom Gedächtnis. Erster Teil (pp. 56-103): P. EPHRUSSI.-(1) In the memorizing of nonsense syllables the part method of learning is considerably more economical than the learning by wholes. (2) In the memorizing of numerals or pairs of words or numerals the whole method gives best results. *Über farbige Lichtfilter* (pp. 104-111): GUNNI BUSCK.-Determination of intensities of lights transmitted by various colored solutions for various wavelengths. Effects of intensity as well as quality of colors may be important in biology. Literaturbericht.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. February, 1905, Band 37, Heft 3 u. 4. *Experimentelle Beiträge zur Lehre vom Gedächtnis. Zweiter Teil* (pp. 161-233): P. EPHRUSSI.-Influence of rapidity of reading on memory. Rapid reading gives best results in systematic method of learning; in chance method slow reading most economical. Paradoxical result explained as due to decrease in association in rapid reading. *Vergleichende Messung der kompensatorischen Rollungen beider Augen* (pp. 235-249): ROSWELL PARKER ANGER.-Compensatory rolling of both eyes is identical or nearly so—both as to amount and direction. The conclusions of Delage, who found considerable differences, are criticised and denied. *Die scheinbare Vergrößerung der Sonne und des Mondes am Horizont* (pp. 250-261): EUGEN REIMANN.-History of the problem. Sky at zenith appears nearer and darker than at horizon due to degree of transparency, thickness, illumination and relative brightness of background. The apparent size of objects seen under equal angles increases, therefore, from zenith to horizon, since they are at an apparently greater distance. Literaturbericht.

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Peckham, George W. and Elizabeth G. *Wasps, Social and Solitary*. With an introduction by John Burroughs. Boston and New York: Houghton, Mifflin and Company. 1905. 12mo. Pp. xiv + 311. \$1.50 net.

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NOTES AND NEWS

THE fifth annual meeting of the Western Philosophical Association was held at the University of Nebraska, April 21-22, 1905. Professor A. Ross Hill, president of the association, chose for the subject of the annual presidential address, 'Philosophy and Education.' The program of the meeting was as follows: 'The Place of the Time-Concept in Epistemology and in Metaphysics,' Professor J. E. Boodin; 'The Category of the Unknowable,' Mr. David F. Swenson; 'The Esthetic Attitude,' Dr. Robert Morris Ogden; 'Some Contradictions in Current Theories of the Psychology of the Judgment,' Professor W. B. Pillsbury; 'The Relation of Psychology to the Philosophy of Religion,' Professor F. C. French; 'The Meaning of Right,' Professor Frank Sharp. In addition, there was a general discussion on 'The Present Estimate of Kant's Place in the History of Theoretical Philosophy,' led by Professor A. O. Lovejoy, and voluntary reports in philosophy and psychology.

At the recent meeting of the board of regents of the State University of Iowa, the following changes were made in the department of philosophy and psychology: Professor G. T. W. Patrick was granted leave of absence; Professor C. E. Seashore was made head of the department; Professor Arthur Fairbanks, of the department of Greek, was asked to give the courses in ancient and medieval philosophy and the philosophy of religion; Dr. J. B. Miner was promoted from instructor to assistant professor of philosophy, and Mr. Daniel Starch was appointed assistant in the laboratory.

THE Rev. William I. Chamberlain, now in charge of the missionary college at Verlore, India, has been appointed professor of philosophy at Rutgers College.

PROFESSOR HUGO MÜNSTERBERG, of Harvard University, has declined the offer of a chair of philosophy, tendered to him by the University of Königsberg.

PROFESSOR CHARLES M. BAKEWELL, associate professor in philosophy in the University of California, has been appointed professor in philosophy in Yale University.

DR. R. B. PERRY has been promoted to an assistant professorship of philosophy at Harvard University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

NATURAL VS. ARTISTIC BEAUTY

GOING back to the beginning of the history of esthetics, we find that Plato's interest in beauty was overshadowingly in that of real being, and that only in a very qualified sense would he concede the works of art to be beautiful at all. So, too, the true founder of modern philosophical esthetics, Kant, approached the esthetic problem primarily from the side of real objects, and only secondarily raised the question of artistic beauty. When we come to Hegel, however, we find the theory of the beautiful expressly identified with that of fine art. And the writer of our only noteworthy English history of esthetics, Bosanquet, follows in the wake of his master, Hegel, and makes the same identification. Indeed, the definition of esthetics as the philosophy of fine art, may be regarded as being, from a variety of influences and reasons not requiring here to be specified, the orthodox and, so to speak, official view to-day. This, perhaps, is what makes its fresh consideration only the more needed. I take the Hegelian statement and justification of it as representative, because with so thorough a philosopher as Hegel, or even Bosanquet, a deliberate defining of esthetics as exclusively or essentially philosophy of fine art, implies an express and thought-out pronouncement touching the relation of these two regions of the beautiful, Nature and Art, and, more particularly, a pronouncement as to their relative rank in beauty. Such a pronouncement we do find in either writer. Clearly its bearing is not merely on our verbal definition of our science, but on how far certain topics need to be enlarged on in our substantive treatment of it, if indeed they require to be introduced at all. Perhaps it is only putting the same thing another way to add that, on the soundness of our conception of the relation of nature and art, will depend whether our esthetics does justice to every phase of actual fact in our experience and ordinary estimation of the beautiful. The purpose of this short paper will be to canvass, for the reason already indicated, the position developed by Hegel and Bosanquet on this question of Nature *versus* Art, and to determine how far it needs to be assented to, and what follows. The consequences, however, whether for the doctrine or history of esthetics, can only be suggested.

Hegel condemns natural beauty to a very inferior place as compared with that of art. For him there is nothing in the former which is not taken up, 'conserved' and enriched in art. Hence the inclusive adequacy of the definition of esthetics as philosophy of fine art. Centrally, this condemnation of nature by Hegel rests upon a proposition fundamental to his own general philosophic standpoint, namely, that truth attains its appropriate and adequate embodiment only in the form of pure (*i. e.*, reflective, subjectively self-conscious) thought. On his view, the sensuous concreteness of the natural object is not an addition to its significant content, but a 'superfluity,'¹ an irrelevant obscuration of its pure essential import. 'All the time,' he says, 'its (the natural object's) truth is contaminated and infected by the immediate sensuous element.'² And since 'The hard rind of nature and the common world give the mind more trouble in breaking through to the idea than do the products of art'—for the reason that these latter relatively abstract away from 'the immediate sensuous element' and 'the hard rind of nature,' and thus make some approach to the purity of thought,—it is evident why the products of art should be rated above nature in significance and beauty. For, of course, the core and substance of beauty lie but in depth and wealth of significance. However, Hegel's contrastings of the expressive powers of nature and art have an interest aside from their technical bases in his system. One might adopt a general philosophical point of view exactly the opposite of the Hegelian, and maintain that as to the amount of meaning somehow *wrapped up* and dynamically efficient in it, the perceptual world indefinitely excels that of thought, the thought-world being an inadequate abstraction and a falsification, which, not one whit the less from the fact of its reaction into and fertilization of perception, forever follows in the rear of the latter; and yet at the same time one might concede that, of the two modes of perceptual presentation, the immediate natural and the artistic, the artistic, from its very approach to the abstractness of reflective thought, was, as Hegel held, of the greater esthetic worth, because it possessed the richer capacity of bringing the wrapped-up content of truth or meaning into relative explicitness. In fact, Hegel's disparagement of nature in her revelatory power as beauty, reaches back, along with the exaggerated abstract intellectualism of his whole system itself, to a deeper root in a general inability, on his part, to appreciate nature as other than a comparatively blind and meagre region. As in his philosophy in the total it is his nature-philosophy which is the weakest section, so

¹ Bosanquet's translation of 'The Introduction of Hegel's Philosophy of Fine Art,' p. 16.

² *Ibid.*

in his esthetics it was inevitable that that should show forth as the least impressive part in which demand was made on his sense of nature as a sphere of the beautiful. Bosanquet confesses as much when he feels, at any rate in portions of Hegel's discussion of the natural beautiful, something 'half-hearted,'³ and when he acknowledges that Hegel's concentration of attention upon sharply marked, compact, individual beings in nature, to the comparative neglect of those looser large aggregates and masses such as make landscape, and his progressively higher estimation of the individual existences according as they are inorganic, vegetable or animal, do not correspond to the order of our actual experience. However, Hegel has a reason for depreciating nature, which may appeal without any special reference to a Hegelian rendering of it. The natural object is inferior to the art-product because, unlike the latter, it has not been, he says, 'born—born again, that is—of mind';⁴ or because, as he words it in another place, it 'has not sustained this (the art work's) passage through the mind.'⁵ This want of the new birth in mind may be construed into at least three things. First, since, of course, nature exists for us only as a construct in our own perception, the want intended to be pointed out may be, that mere natural perception does not sufficiently evoke and express the percipient subject, his capacities, ideals and inward reaches of being. Second, the natural object is not, like the product of art, a *deliberate* construction, and therefore is defective in content and import. Third, whatever may be the *presence* of the mind in nature, it can not there feel thoroughly *aware* of itself, and hence *at home* and *free*.

The contention that in natural (immediate) perception the content and nature of mind are but imperfectly exhibited, is entirely in keeping with Hegel's general doctrine that the advance towards pure thought is an advance in completeness of content and rationality in the sense that all release from admixture of irrelevancy and confusion is a positive progress towards adequacy and completedness. But for those of us who are loath to write down the sensuous body as a contingent and expressionless contamination of mind, the question does not turn on this point of relative purity and appropriateness in the mind's different modes of manifestation. It takes instead this form: Is the mind in its whole *extent* of resources projected into its direct, natural perceptual constructs? What does modern psychology say, with its doctrine of 'apperception,' and its declaration that in every experience, every object set

³ Bosanquet, 'History of Æsthetics,' p. 338; cf. also p. 337.

⁴ Bosanquet, translation of 'Introduction to Hegel's Philosophy of Fine Art,' p. 3.

⁵ *Ibid.*, p. 55.

by the mind before itself, are brought to bear and embodied the mind's *whole* organized capacity and content? If there is any deficiency in the mind's self-projection in natural perception, clearly it must be in that lack of self-awareness on the mind's part which, in this form of experience, we must cheerfully acknowledge. But how radical this lack is, and what compensations it may or may not carry with it, have not yet been settled.

Does the fact that nature is not a deliberate creation of the mind make her inevitably a region of profound unconsciousness, with her meaning hopelessly deeper sunk in implicitness than is the case in art? We need, in the first instance, to recall that the deliberateness of art is of a very peculiar sort, or rather that it is a commonplace of even the most ordinary opinion that essentially art is not deliberate at all. The creative process may be deliberately initiated, as we might initiate our looking at a landscape; or even it may be possible that by a mere reflective cleverness and judgment we lay down certain broad outlines and a provisional rough sketch of the path our creation is to take; but for the rest we require the whole essential life and quality of the work to be the outcome of intuition, inspiration, unconsciousness. Still, that the intent of the whole process is precisely to render meanings more *felt*—in some sense then more nearly explicit than they are in the immediate presentation of nature—can not be denied. On the other hand, is it inevitably the case that in the natural object the mind can not find itself and feel at home and 'free'? This brings us directly to our third count in the supposed inferiority of nature, namely, that however much of meaning may be *buried away* in the natural object, the mind can not there be *aware* of it, and therefore find itself, as in the product of fine art. This really is the very problem of our whole paper itself; but, before we undertake to settle it, we have to determine what we are going to include under the object of nature. Here Bosanquet, in support of the Hegelian condemnation of nature and restriction of esthetics to fine art, brings forward a theory of what constitutes nature esthetically considered, which we must make our reckoning with, not the less because it is so sophisticated a conception. It will be found quite in accord with Hegel's own declaration that for the judging of natural beauties there is no adequate norm of standard.⁶

Bosanquet develops at considerable length⁷ the argument, that by natural beauty is to be understood only such beauty as exists for the untrained perception of the average man. He explains by drawing a comparison with the world of knowledge. Natural

⁶ Bosanquet, transl. of 'Intro. to Hegel's *Æsth.*,' p. 5.

⁷ 'History of *Æsthetics*,' pp. 3, 4.

beauty corresponds to that informal, unsifted, unorganized knowledge, so called, which belongs to the man in the street; whereas to the critical, clarified, orderly, *recorded* knowledge of the trained man of science, corresponds the beauty which the artist reveals and *preserves* for us in the world about us. Bosanquet speedily drops the restriction that recording and permanence enter essentially into beauty; and concedes that "it is a blunder to imagine that there is no art where there is no 'work of art'"; which of course it is, just as it would be to assert that there is no science where it is not written down in a book. But, furthermore, is the contrast between science and art on the one hand, and common sense and natural beauty on the other, itself just? Granted that science and art are alike 'interpretations' of nature; but does it follow that developed acumen and insight can be exercised only in the artificial region of the laboratory or studio? Surely we do not have to conclude that actual, direct, so to speak out-of-door contact with nature just as she comes, inevitably remains at the vulgar level of her, while the mind capable of deeper thought and deeper appreciation moves on to some more exalted region than just nature herself? The most gifted scientist may bring his subtlest powers to bear in his mere plain looking, or plainest judging, and this for him will be his common sense; and so the most exquisite artistic endowment may be called into play in contemplation of solid matter-of-fact objects, and these do not thereby cease being natural. Bosanquet concedes such a finer use of perception, but would, however, describe nature lifted to this level as in reality art: the actual perception of the man of artistic genius is itself a creation of art. This is a needless perversion of terms in the interest of an arbitrary definition and limitation of esthetics. It may be true that common sense and mere natural perception both constitute descriptions of the world; however, they are not, by the naïve consciousness, appreciated as such. To the latter, they are an immediate experience of the *presence* of the *fact* itself; and precisely herein differentiated from those *deliberate, sophisticated* describings called science and art. Why not retain this useful distinction, and call by the name of nature all beauty whatsoever, no matter by whom experienced, which is gotten through out-and-out unspoiled *presentation*? Natural beauty thus conceived—which is the conception in all ordinary talk or discussion—would not be without a norm of measurement; the norm would be the testimony of the most competent judges, precisely as it is in art. Such a natural beauty, too, might at last stand some chance of rivalry with that of art. For it might possibly, in certain circumstances, exhibit characteristics and superiorities of its own—not simply be 'included,' as the Hegelians hold, within the beauty of art. Whether

under such natural beauty should be embraced actual human personalities and spiritual traits, or even human bodies, need not now trouble us, though I can see no valid reason why these facts of actual *nature* should not be counted among the beauties of nature.

I am not going to maintain an absurdity. I am not tempted to minimize the real vocation of art. In part, no doubt, its business is, as Hegel and Bosanquet both point out, to record and give permanence to the otherwise fleeting in esthetic experience; in part, too, merely to disseminate, publish notable scenes and situations which, as immediate spectacles, are accessible to only a small public. But neither of these comparatively lowly functions, much less any delight men take in technique and cleverness of imitations, would explain the mighty part art has played in the history of culture. Its prime and characteristic business is precisely that of releasing import out of the tangle and confusion of the actual world. But does this imply that nature always and everywhere is confused and tangled? May not a percipient of genius, approaching a mountain, or the sea, or a noble human figure, in the proper mood, find in the immediate presence of it a satisfaction and significance at least as deep and convincing as any he could get from an artistic rendering of the same object? Does nature never strike us as at least as 'perfect' as art? Does the painter of a sunset or of a human face always 'idealize,' and never content himself humbly to transcribe, and preserve and publish? If the natural object suffers to some degree from a lack of abstract directness in the 'idea' of it, may not this want be more than compensated for in the object's very fuller concreteness? For why need the concreteness of it be an irrelevancy and a distraction? Why may not, rather, the very unexplored outskirts of it dartle prophetic gleams and hints of import, and charge the mind full of a sense of meaning 'deeply interfused'? Moreover, if we are not disciples of the gospel that the natural habitat of mind is amid abstractions, but instead regard them as part of the fall from Eden, and part of the penance through which the Garden is to be won again, the more liberal concreteness of nature, where we truly do not find ourselves bewildered by it, ought only to give us a more inspired, or at least a more securely easeful, sense of at-homeness. So, too, the sensuous integrity of the natural object ought to lend it some of that impression of solidity which the sense of the real massiveness of the materials employed imparts as a legitimate esthetic effect to the art of architecture.

There is, however, a superiority of nature over art much more obvious than any of these. I might designate it as that which arises from nature's greater *scope*—scope in *magnitude*, and as to *variety*. An incontestable part of the esthetic power of a vast natural pan-

orama or event, as a hundred-mile front of grand snow-capped peaks, or an earthquake, lies in its very size and might, which art absolutely can not reproduce. Or if it be contended that poetry is able imaginatively to summon it before us, then in the merely imaginative form it lacks that penetrative intensity which, so long as it hinders none others, is a genuine esthetic quality.

But, lastly, and beyond all others, nature has the advantage of being *real*. In saying this, I know that I not only brush aside the Hegelian attempt to demonstrate that at bottom it is the 'Idea' and not the living flesh-and-blood being that seizes our deep attention,—if only we will be philosophically enlightened,—but am, apparently, running counter to the whole established tradition of esthetics. Beauty, it is agreed on all hands, must be a disinterested experience. Granted; yet in our anxiety over the old perversion of beauty to moralism and didactics, are we not going to an opposite absurd extreme of abstraction? Are we not, in greater or less measure, still following in the wake of Kant, when, to make sure against any admixture of the intellectual or ethical interest, he set up a 'pure' beauty, which, strictly, would have been a matter of blind feeling and unrealizable, and over against that an 'impure' beauty, of which sort, consistently speaking, all actual beauty was, and, paradoxically, dignified and appealing just in the measure that it was impure? The mind's esthetic responses can not thus, can not at all, be cut off from the intellectual and ethical. The experience is named solely according to its center of gravity, according as the phase of esthetic, intellectual, or ethical reaction is in the ascendent. But now, if in the so-called esthetic experience you preserve the true esthetic center, the primacy of the esthetic moment, what else than pure gain in getting the largest possible injection of the intellectual and moral appreciation, the largest possible accompanying consciousness also of these values, calling out, in short, the whole man, instead of some pale, unreal, mincing part of him? It is trying this last that ends in estheticism, art-for-art's sake, and the whole train of kindred fallacies and degeneracies. On the other hand, if you will, reality is itself a factor in rational wholeness. It is, doubtless, this reality which at bottom gives, if nothing else, that superior sense of solidity which we spoke of above as accompanying the fuller sensuous concreteness of the natural object. The natural object has an advantage, then, even esthetically, in being real.

What are some of the consequences to esthetics from our argument here? We allowed ourselves space for only a word on this point. If theory would concede what every lover of nature is altogether persuaded of, and recognize that natural beauty is not of necessity in every instance only an inferior, inchoate form of the

same thing that art renders in more perfect shape, it might discover that natural beauty had some differentiating characteristics and superiorities of its own, such as we have been suggesting, and might find it worth its while to investigate these, in the interest of a sounder discrimination in its treatment of the beauty of art itself. Out of such a procedure might issue even such a thing as a completer insight into the whole final mission and upshot of art, for instance, if it could be shown that the end of art is not to lead us away from nature, but to mediate nature for us, bringing us ever from a lower, blinder level of nature ultimately back to nature on a higher, more intelligible plane. This alone would be worth while; but there might, perchance, further come to pass even that which Hegel declares no one has taken it into his head to try, namely, a systematic account of the beauties of nature, *as distinctively natural*.⁸ These two or three things would surely bring about a juster balance than must seem to prevail in our discussions of the subject of beauty generally: even the layman could now appreciate that the frontiers of our theory of the beautiful run impartially with those of the kingdom of beauty itself. Finally, there would be some readjustment of perspective in the writing of the history of esthetics. To take but one instance, the historians of esthetics would not then fall into the distortion of envisaging all that Plato says on the subject of beauty from the point of view of its least valuable portion, namely, his utterances on poetry and the arts; but would start rather from the indefinitely weightier part of his reflections, that which has to do with 'real' beauty. Plato would then loom up in very altered proportions in the work of a writer like Schasler, and even Bosanquet would estimate some points quite differently. Other consequences could be indicated, but the above will suffice to illustrate our thought.

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THE POSSIBILITY OF A PSYCHOLOGICAL CONSIDERATION OF FREEDOM.

IN contemporary discussions of freedom the general point of departure is the definition of freedom as a practical truth or a social necessity. That is, the ethical, political, institutional and industrial conditions of to-day vitally demand on the part of each individual a sense of his own responsibility in the social order, and this consciousness of responsibility, it is held, implies an accom-

⁸ Has not the work of men like Ruskin suggested that there might be richer possibilities in such an undertaking than Hegel cared to promise it?

panying consciousness of freedom. As to the absolute truth of freedom, the tendencies are, on the one hand, to regard the consciousness of freedom as illusory, while at the same time emphasizing its practical value, and, on the other hand, to regard it as true by means of such postulates as a transcendental self, chance, or effort as an 'independent variable.'

In this age of psychology, it is natural to attempt a psychological consideration of freedom. But this attempt meets immediate opposition in the writings of such men as Professor James and Professor Münsterberg who draw a sharp line of distinction between psychology and philosophy. They say that as a science psychology is bound to insist upon the categories of causality or uniformity of sequence, and of an empirical self. This implies a deterministic view of experience which is incompatible with our practical consciousness of freedom because it is contradictory of such postulates of the transcendental self, etc., mentioned above, which are considered essential to any conception of freedom. Therefore these writers hand over the question of freedom to metaphysics or philosophy in contradistinction to psychology.

Whether metaphysics (or philosophy) and psychology are disparate as they are thus held to be depends upon the data and significance of psychology. Both Professor James and Professor Münsterberg make statements to the effect that psychology has its own peculiar data and method to which for scientific purposes it may strictly limit itself and to which, because of philosophical implications, it must limit itself. Psychology which trespasses upon the territory of philosophy has an entirely destructive import for all that concerns us most deeply, our personalities, our freedom and our duty. These two writers hold this view, notwithstanding their repeated emphasis on the fact that psychology was not created as an end in itself, but to subserve the real interests of life, our demand for rationality, for the unification and control of our experiences. So to state as a final definition of psychology that it is a mere abstraction from the realities of life is practically to deny that psychology can serve those purposes for which it was created. Now the issue defines itself in their conception of the data of psychology as independent existences, ready-made material, variously designated as objects in consciousness, mental elements, states of consciousness; the issue centers in this conception and in the logical conclusion therefrom that the formulas of psychology are mere abstractions. It is agreed that psychology was created to subserve the real interests of life. In one sense, then, the data of psychology do not exist as facts in themselves, but as organic outgrowths of these interests. And are not the formulas of the psychologist real in so far as he has brought them into existence

as instruments for the solution of his problem? They are real in the sense that they are forms which experience takes when examined with reference to its nature as a concrete process. What makes them unreal is to consider them apart from the ends for which they were created; or, to express it positively, it is reference to value that vitalizes and so justifies them. That is, either psychology is inherently instrumental in the service of the every-day interests or it has no right to exist. It is concerned with functions and values as well as with structures. From this point of view we see the intimate and essential relation between philosophy and psychology.

Since psychology deals with the laws and conditions of the process of experience, a psychological consideration of freedom comes to mean a discussion of the problem how the experience of control with its corresponding sense of freedom is possible. This involves an interpretation of the terms, subject and object, agent and instrument, a discussion of the implications of this interpretation with reference to certain categories that are always bound up with theories of freedom, and finally a consideration of the relation of thought to action.

Philosophy has maintained that, given the two factors subject and object, agent and instrument, in order for experience to be possible they must somehow be brought together. Subjective idealism and materialism have both failed to solve the problem. The dilemma centers in the conception of subject and object as separate entities. This conception, however, is purely an assumption; we know no objects apart from ourselves, no reality apart from that which we experience. Our experience is an activity conditioned by a changing environment and by changing interests. It is the process by which we come to know and interpret reality, to reconstruct and utilize our environment; it is also the process by which reality, objectivity, comes to be what it is through our interests and interpretations. That is, reality is experience, activity. We must cease to regard it as something static and external upon which the subject or agent works *ab extra*. It exists only as it is continually recreated in instrumental relations to our needs. This, at least, is the only reality we know. Subject and object, or agent and instrument, then, are not two different orders of being, but may be accounted for as organically or functionally differentiated within the concrete process of experience. Reality or the objective side of the self is experience taken as given; the subjective side is experience conceived as undergoing reconstruction. Both as such are abstractions. The actual experience is the organic realization of the latter through the instrumentality of the former. It is only in the disadaptions of experience that we distinguish between subject and object, agent and instrument, and that they are held apart only until, through reconstruction, experience is again unified.

From this point of view we see no necessity for postulating a transcendental ego. Since the time of Hume a great deal has been written of a permanent self behind the phenomena of mental life. Such a postulate, it is held, is necessary to a conception of freedom. Thus the problem is formulated: Are we justified in conceiving of the self as a permanent presupposition or must we limit our judgments to what we know of passing states of consciousness? If we conclude the former, we can not account for change and growth in our experience; if the latter, we can not account for unity and permanency. Conservation and change are essential factors in our experience. For, on account of the dynamic character of our environment and the need of our mental life for reconstruction, if the self were lacking in the power to change, it would be lacking also in the power to preserve that part of its nature which it was most eager to preserve. Hence we gain nothing by postulating a transcendental or pure ego, for we can never bring such a self into connection with a world of changing phenomena. Nor do we need such a presupposition, for the term organic as applied to experience gives both unity and variety. The self is a growth, not a static entity existing before its activity or passing states. The facts seem to require no more than the conception of habit to explain the sense of a permanent or identical self in our experience, and the conception of impulses and ideals as habits comes to consciousness for reconstruction to explain the changing element in our experience. In one sense there is no such thing as a permanent self, we never have the same experience twice; and, in another sense, we never have a passing state of consciousness, an experience once had becomes an organically constitutive element in all our future experience.

We also see from this view that cause and effect are inadequate terms to apply to the growth process of consciousness since they imply relations between separate entities. Such relations are external, so that it is impossible to conceive how the cause passes over into the effect. The phases of experience are growth relations. Therefore no absolute line can be drawn between the causes and the effects. We may, of course, abstract certain conditions which appear more significant and call them the cause, but actually all the conditions are contributing factors in any process. We can employ the terms not in any fixed sense, but only relatively to the circumstances of the concrete situation. What is now regarded as cause is again regarded as effect and what is effect from the point of view of all that has gone before is cause of all that is to follow. The effect is impossible unless it is intrinsic in the cause, and the cause is not a reality until it fulfills itself in the effect.

It will be said that this statement does away with the causality

category in one sense and so with the old determinism which defined that which is determined as that which is externally made to be what it is. But, after all, does it not leave the causality category intact? For just because it no longer conceives of isolated independent existences it leaves no room for chance—'independent variables,' as Professor James says. In the conception of reality as an organic process the idea of sequence or necessity is rendered stronger than ever.

How, then, are we to understand the terms necessity and chance? It seems adequate to interpret them as functional categories growing up within the process of experience. No one doubts the practical value of the sense of freedom, whether he believes that freedom predicated is a reality or an illusion. On the other hand, the foresight by which we control our conduct is really the recognition of inevitable relations. That is, both the idea of freedom and the idea of necessity are instrumental in the ethical life, if either is thus instrumental. And the solution of the antinomy involved in this statement is found in conduct itself. Necessity and freedom as such are abstractions. All activity which is mediated in consciousness grows out of vague feelings of an end to be attained and of the means by which to attain it. So long as the activity is still in the future, as it were, the conception of the end is only general, and hence the idea of chance is relevant. The consciousness of the means we are to employ is consciousness of objectified experience, experience that we have achieved. This reference to the past is a reflection upon essential relations, hence the idea of sequence, necessity. The activity itself is the concrete process of identification of means and ends, of realization of the latter through the former. To this process we apply neither the term necessity nor chance, but actuality.

In his essay, 'The Dilemma of Determinism,' Professor James dwells exclusively on the side of chance. He uses as an argument the supposition of a choice made twice over, so that two different universes result, neither one of which we can assert to be the rational sequence of what went before the choice. So, he holds, the notion of chance is made good. But in this argument no mention is made of any predisposition or partiality toward the two options. More than that, the entire argument rests upon the non-existence of any predisposition. If such an experience of indifference between two objects could ever occur there would be no activity at all. That is, in leaving out the element of partiality in the consideration of choice, Professor James has abstracted from the actuality of the choice just that which was necessary to constitute it.

It is obvious, on the basis of the above statements, that thinking, feeling and doing are differences of degree, not of kind. We are always acting; feeling and thinking are functionally differentiated

within that activity. They are instrumental to conduct. Experience is dynamic; changes are always taking place, and coming to consciousness as disadaptations. Thinking is this consciousness of friction or tension, and is carried on for the sake of the unification of experience. It is the interplay of images as tentative modes of response or as experiments to discover the response that will adjust the organism to the environment. This view is closely allied to the pragmatism current to-day which regards thought as an instrument that has its origin in the practical needs of our nature and finds its function in the realization of the practical ends of life. Thinking is essential to practice and has its value in its practical efficiency; it brings to consciousness the inadequacy of the previous experience and serves to reconstruct it. It is valid if it successfully controls and directs action.

How is freedom to be interpreted from this point of view? It may be said that the term is robbed of all its significance unless the agent is something apart from the situation or the instrument, unless there is a transcendental or permanent self to which freedom may be referred. How can we think of it with any sense of its actuality if the term chance is relevant only in consideration of the future, and if in the organic conception of the relation of thought to action, no room is left for the will as a separate and superaided power to enter into our experience and dominate it? If these metaphysical presuppositions are necessary to the conception of freedom, then the term is deprived of all its significance according to the above conclusions. For these conclusions recognize no freedom except that which is in relation to our environment, to our instincts and habits, our feelings and ideas, in short, to the growth of experience. We know no absolute freedom. However, we do not need such a conception, for although we know no freedom apart from conditions and relations, these limitations are not static, but changing in accordance with the principles of a growth process. Moreover, as to these presuppositions so regarded as essential to a belief in freedom, they do not constitute its significance; they have grown up about the term as explanatory assumptions. The real meaning of freedom has consisted in the value of such a belief in lending incentive, vitality, responsibility, and hence efficiency, to our conduct. Freedom is, then, efficiency, it is control, rational judgment, science, character, the ability to make one experience function for another. There seems to be no reason why we should employ in the definition and explanation of freedom any other than these terms, which stand for the realities themselves, not for what may be predicated by these realities. Thus it is possible to avoid the metaphysical antinomies involved in such predications. But what is this control? It is the

mediation in consciousness of an instinct or a habit, the reconstruction of a mode of response which once answered our purpose to meet the new conditions of the present situation. That is, as we have said, abstract freedom, like all abstractions, is not to be found. Control is always concrete. It inheres in a certain object or end to be attained, it is always freedom from or mastery over those specific conditions which oppose the attainment of this object.

Professor James, on the contrary, maintains in his chapter on the will that ultimately the means of control is effort as a spontaneous increase of energy, as an 'indeterminate function,' or an 'independent variable.' He holds that the condition for action is the absence of contradictory images or ideas in the mind. The antagonism of ideas is deliberation. When the inhibitions are removed we are said to decide. This decision or fiat in the moral sphere is really the act of dropping the idea contradictory to the wise action and filling the mind with the latter. Now in certain cases the fiat seems to take place in the line of greatest resistance, so that effort appears to be an 'independent variable.' The question of free-will, therefore, relates solely to the *amount* of effort of attention which at any one time we can put forth. Hence the problem is insoluble on strictly psychological grounds, for it is impossible for psychology to tell whether more or less effort might have been exerted. It is a consideration for metaphysics; and the contradiction involved in the conception of action in the line of greatest resistance is handed over to metaphysics for solution.

But while energy is of course essential, it isn't so much the amount of energy which he is able and willing to put forth that makes the man as it is his ability so to organize his interests and activities that he does away with friction, thus making the most of his organic energy actual at any one time. The man who really does the most in the world is the man who conducts his life on a scientific basis. In other words, freedom is, as we have said, the name for intelligence, for order and method in our acts. In this age of advanced civilization, to say 'I can' does not mean I have the energy, but I know how. The man who gains mastery over the circumstances of the situation in which he is placed is the man who understands those circumstances, who knows how they happen to be what they are and hence how they can be modified and utilized. The more we know about consciousness, about the conditions of the growth of the mental life, the better are we able to control our mental and moral responses. In one sense, then, there is no limit to our freedom, since continually through science we are coming to understand more and more the conditions of our experience and to invent instruments of control.

Now, if it is not through the addition of effort as a spontaneous force, how do we keep the attention fixed upon one idea? The truth seems to be that we can't just 'drop' this idea and fill the mind with that, as Professor James maintains that we can. It is not possible to drop an idea any more than it is possible to annihilate an object or a force. And just as in the physical world there is no creation, but transformation, so in the mental and moral world our real achievement is conscious reconstruction. Consciousness at any one moment is an outgrowth of previous experiences more or less incipiently expressing themselves and emerging as images. These images are active factors in the present experience no one of which can be left out of account or mechanically dropped. We are not free *from* any one of them, but by taking due account of each, by directing them into working relations, that is, by centralization and organization, there results an activity which may be termed spontaneous and free within itself. It is deliberation which is this process of reconstruction of ideas; it is deliberation through which they are brought into working relations. What actually happens when we decide is just this modification and organization of conflicting ideas or interests.

In one sense, then, there is no problem of freedom. And this statement is illustrated by the fact that not all experience is affected by a belief in freedom. Prereflective experience needs no such belief. The practical man just goes ahead planning and acting, undisturbed by any questions as to whether he is a free agent or not. It is the moral man of a certain type who asserts upon reflection as to the technique of his conduct, that it is his faith in his own freedom and responsibility alone that prompts him to do the moral act. And it is on this basis that certain writers, as Professor C. A. Strong and President Hadley, maintain that freedom is a practical truth or a social necessity. While it is true that this belief is essential to some people as an incentive to act, in such cases it is always accompanied by a certain doubt as to freedom, or rather it is in fact conditioned by doubt, since it is this scepticism which renders freedom essential as a practical truth. The belief as such is an abstraction; it has value only as it is necessitated by doubt in a concrete situation, and only as it actualizes itself under the conditions of this situation, which it does in the manner described.

We have already emphasized the necessity in a working conception of experience of regarding it as an organic unity. When disadaptions occur within the process, the activity is brought to consciousness for reconstruction as a conflict between nature and value, self and object, means and ends, habits and ideals, desire and effort, pleasure and duty, higher and lower self, and the like. In each case,

however, these terms do not stand for separate orders of being, but for correlative phases of the tension. This view explains the fact that good habits are conditions of high ideals; that while desire is the incentive for effort, effort is the measure of desire; that our real pleasure is the joy we take in doing our duty, in getting mastery over the conditions in which we are situated, that is, in unified activity.

From this point of view deliberation may be defined as just this organic tension which comes to consciousness in the form of different phases of experience, the interaction of which is instrumental in the growth of character. In other words, deliberation by setting the stimulus over against the response affords the opportunity for defining the stimulus before it is acted upon; it has been defined as a rehearsal of action, though not quite to the point where it becomes overt. By setting the ideal over against the habit, the situation over against the agent, by detaching desire from the object, blind, chaotic and inefficient actions are avoided. By holding apart means and end, deliberation renders the conceptions of chance and necessity instrumental in the sense we have explained above. On the one hand, the emergence of consciousness marks the emancipation from fixed habits of action through the introduction of new desires and sensations, new interests and values in life, while, on the other hand, deliberation functions as the investigation, comparison and synthesis of these interests.

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DISCUSSION

MR. BODE'S REVIEW OF 'APPLIED AXIOMS'

IN Vol. II., No. 7, of this JOURNAL, p. 195, Mr. B. H. Bode raises a point of some interest to pragmatists and others. But in order to bring his question into line with the argument of the article to which he refers, we must alter his statement of it slightly. With this object in view it should run: "Can we pass directly from the admission that the law of contradiction is liable to be misapplied, and that, therefore, adverse judgments based upon it are arrestable, to the holding of opinions which, if such adverse judgments were *not* arrestable, would have to be at once condemned?" The difficulty escapes me. There is no question here of arresting and accepting the same opinion, but only of continuing to accept an opinion while the supposed *condemnation* of it is arrested. At worst, the position of those who continue to believe something which is disputed on questionable grounds is rather like that of those who trade with a sea-port which is 'nominally' blockaded. Somehow the trade goes on, even if not with entirely thoughtless confidence.

No doubt the old Adam—the dogmatic spirit—in us prefers to live in thoughtless confidence, and perhaps even dislikes to have his opinions called in question. But the pragmatist has less excuse than other people for this slackness or this quite unnecessary fear of criticism. All his ‘truths,’ he freely admits, are *pro tem.* truths at best, and the duration of their validity is uncertain. Meanwhile, he can not take very seriously a ‘paper blockade’ of objections that seem to lead nowhere and to rest upon mere disregard of the risk of verbal ambiguity. Formal logic is, to him, a region of elegant ideals which do not connect with the actual puzzles of life; and so far as metaphysics is bounded by formal logic, elegance again is the utmost virtue that he can see in it. His only course, therefore, is to carry on business as usual until at least the practical effect of the objections, their relevance to real difficulties of judgment—and so their meaning—can be shown.

Except for the possible misinterpretation to which the last two sentences of Mr. Bode’s note might give rise, I find no fault with his account of the article, but rather admire the clearness with which he has brought out its main points.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Limits of Evolution and Other Essays. G. H. HOWISON. Second Edition, revised and enlarged. New York, The Macmillan Company. 1905. Pp. xlviii + 450.

This second edition of Professor Howison’s well-known volume of essays is a reprint, with some slight verbal changes, of the first, supplemented by a new preface and fifty pages of appendices, explanatory and defensive. There is also a modified and enlarged statement in the original preface (pp. xxiii f.) of the difference between the author’s system of personal idealism and the monadology of Leibniz. The new matter serves to bring out more sharply the essential features of the system, to show the inner connection of the several essays, originally all of an ‘occasional’ nature, and to place the whole theory in a somewhat clearer light. Whether these advantages for the comprehension of the theory are not more than offset, as regards the theory itself, by the clearer exposure of its weakest points is at least doubtful.

To come at once to the gist of the matter. In the original preface the chief doctrines in the system were summarized in ten propositions (pp. xii–xviii). The first two of these were, in brief, as follows: “I. All existence is either (1) the existence of *minds*, or (2) the existence of the *items and order of their experience*; . . . II. Accordingly, Time and Space, and all that both ‘contain,’ owe their entire existence to the essential cor-

relation and coexistence of minds." The remaining propositions set forth the more distinctive doctrines,—the eternal pluralism of a realm of minds, all equally eternal, with no origin at all, yet logically related and spontaneously cooperating, not the subjects, but the source of nature's laws, constituting together 'the Unmoved One that moves all things,' God, 'the impersonated Ideal of every mind' and 'the living Bond of their union,' reigning, not by power, 'but solely by light,' the 'metaphor' of creation meaning 'simply the eternal fact that God is a complete moral agent.' Now in the preface to the present edition we are informed (p. xlv) that all these peculiar doctrines of the author's 'personal idealism' are simply corollaries of those first two propositions. But those propositions, if we allow a certain reasonable interpretation of the second of them, are clearly the common property of Idealisms of various sorts. Are we to conclude, then, that Professor Howison's is the only strictly reasoned variety? Surely it is obvious that there is no more necessary connection between those propositions and the peculiar tenets of an eternal pluralism of minds related as Professor Howison thinks them related than there is between those propositions and, say, the 'Absolutism' of Professor Royce or the 'Apeirotheism' of the late Mr. Thomas Davidson. In truth, the doctrine of the sole existence of minds is entirely neutral as regards their origin and relations.

But Professor Howison does not base his system, in the last resort, on these two isolated propositions. In reply to a critic of the first edition who had complained that the audacious speculations in the book lacked proof, he now tells us (pp. xliii, xlvii and Ap. D, p. 416) that the proof of the entire system, including the propositions cited, is the demonstration, which he claims to have given in several places in the essays, of the reality of *a priori* knowledge. The trouble, however, here is that the reality of *a priori* knowledge is confused with its metaphysical interpretation. In itself the conception of *a priori* knowledge is simply the conception of knowledge that can not logically be derived from the particulars of sensible experience. But this conception leaves open indefinite possibilities as to the actual empirical processes in and through which an individual might conceivably attain such knowledge, while its attainment or possession decides absolutely nothing as to the temporal or non-temporal character, or other relations of dependence or independence, of the existence of the subject that has it. The mystery is that individual minds with cognitive functions should exist at all; but if they exist, the peculiar logical character belonging to some, or some aspects, of their cognitions will doubtless be such as their nature and the nature of any system of which they may form a part will prescribe. Why should not a mind, temporal in origin and dependent on a whole universe of conditions for its activity, if it be truly cognitive at all, be capable also of cognition *a priori*? Professor Howison, indeed, argues for the eternal, that is, non-temporal self-activity, and, therefore, immortality, of the individual mind as follows: (1) 'Consciousness of Time is inseparable from our essential being'; (2) 'we are conscious of Time as a unity at once absolutely complete and also infinite'; (3) 'Time is, therefore, inevitably brought home

to the *soul* as its real source' (pp. 300 f.). But the fallacy lies on the surface. Admitting the premises for the sake of the argument, though in the writer's opinion they are quite baseless (cf. the author's confusion and contradiction in the thought of time and unity, p. 47), the legitimate conclusion is surely not that the soul, that is, as the context explains, 'the individual mind,' is the 'source' of Time, but only that it has an *a priori* knowledge of it. According to Professor Howison, the fundamental *a priori* cognition is that which each mind has of itself, and this, he holds, includes the knowledge of its correlation with other minds (p. 47). Would he infer that each mind is not only the 'source' of its own existence, but of that of every other mind as well? Probably not; and yet he should do so, if the argument is to be equal.

One of the great weaknesses of the system is its inadequate explanation of Nature. On the one hand, the individual mind is made the source of all Nature's laws (p. 306); it is also made, in virtue of its power of *a priori* cognition, the source and explanation of psychophysical parallelism (pp. 295 ff.); and, as we have just seen, it is made the source of Time. On the other hand, Space and Time, with all their contents, are referred, as we have also seen, to 'the essential correlation and coexistence of minds.' Again, more specifically, 'the new system refers the entire being and linkage of Nature to the minds other than God, so far as concerns its *efficient* causation' (p. 391). This is doubtfully consistent and certainly abstract, and meanwhile the bands of Orion and the procession of the equinoxes, in short, all the specific features of the order of Nature, remain just the same brute facts as before. Nor does the author appear to be any more successful with his conception of God and God's relation to the world. In the first place, the proof of God's existence is lame; the argument (p. 354 ff.) is that God must exist because the idea of every self involves the idea of God as the perfect intelligence, the ideal type. But this only proves the existence of the idea. Again, God is conceived as only the final cause of the world of minds; he 'has no efficient relation to their being' (p. 371). On the other hand, the final cause is declared to be the 'originating' member of the system (p. 365), and God's supremacy is even spoken of as 'omnipotent' (p. 313). But the members of the system are expressly characterized as being without any origin at all; they are all alike free, self-positing, and God only thinks them as distinct from himself in thinking himself. And by God's being a final cause is merely meant that he is an attracting ideal: God's immanence is moral, the indwelling in spirits as their light (p. 72). But why drag in 'God' for any 'providence' of his? Why, on the theory, is not every spirit self-illuminating, just as, on the theory, every person, according to the author's favorite quotation, has 'life in himself'? Pantheism is characterized (p. 64) as atheism, on the ground that it denies the distinct existence of God in his office as Creator; and Professor Howison frequently writes as though he held a special brief for theism: but it is hard to see how a theory which holds creation to be only a metaphor for the eternal fact that God is a moral agent is any better off, or why, in fact, God is needed at all.

The author charges opposing systems with 'Creationism.' This he explains to mean making the efficient cause central, whereas he makes the final cause central (p. 393). But his conception of efficient cause seems to be narrowly restricted to the conception of mechanical causation, while, in spite of his Hegelian antecedents (see p. 63 n. and p. 67 n.), he never gets beyond the equally narrow conception of final cause as an attracting ideal. When, therefore, he makes this the sole causal relation of mind to mind, he is naturally unable to explain, *e. g.*, the peculiar impression made by his own ideas on an unsympathetic critic. But seriously, is there not such a thing as an immanent final cause of a whole, or the principle of a whole determining its parts? In monistic idealistic systems God is conceived as this principle, as the 'ground' as well as the 'goal' of finite minds and of Nature, each mind containing and expressing the principle, being self-conscious and self-determining, indeed, but not in an absolute sense, because no mind except God is completely self-conscious, *i. e.*, possesses the complete consciousness of itself, or is completely self-determining, because there is no complete self actually there to determine. This view of monism the author never really attacks.

As a final criticism, mention should be made of the disfiguring solecisms which occasionally mar the text and add to the irritation of a reader who does not see why a claim to be a philosopher should exempt one from writing good English. Such, *e. g.*, are 'sourcefulness,' in the sense of being the source of (p. 309), 'enwholing self' (p. 298), 'universal greatening' (p. 255) and 'to reluctant' (p. 77).

But in spite of disagreement one may feel grateful to Professor Howison for giving us so much to think about. It is to be hoped that he may fulfill the promise of a more systematic exposition of his ideas, in which event much that now appears doubtful or obscure will probably appear both clear and illuminating.

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Zur Experimentellen Kritik der Theorie der Aufmerksamkeitschwankungen. BERTIL HAMMER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane.* Bd. 37, Hft. 5. Pp. 363-367.

The article is strongly suggestive of the famous chapter on snakes in the volume on the fauna of Iceland. In the first place, the author argues that whatever the causes of the phenomena in question may be, they have nothing to do with attention or we could not record them. He then attempts experimentally to reduce the fluctuations of slight visual stimuli to adaptation, a purely retinal process, and ascribes auditory oscillations to changes in the source of sound.

His experiments on sight follow Pace very closely. The stimulus was given by the boundary between rectangles of paper photographically prepared to give very slight differences of brightness. A dot on the dividing line was fixated and a record made of one appearance and reappearance. His results show that the times were longer with greater differences, that

they usually became shorter during a series of experiments and that negative after-images could be registered while resting the eyes between experiments.

On the basis of these results the author insists that the vanishing in all so-called attention fluctuations is due to adaptation and the recovery to slight eye movements. This conclusion seems doubtful for several reasons. (1) As the author rather savagely points out, in most other experiments the fixation is by no means accurate and the disappearances come in spite of slight movements. (2) Even in fixation intended to be constant, as in the present investigation, it is not likely that the eye was motionless for the eight to thirty seconds during which the experiment lasted, as McAllister has recently pointed out that the eye is seldom at rest for one ninth of a second continuously. At least it would be most unlikely that it should be absolutely at rest for so long a period as twenty seconds and then move unconsciously at the end of that time. (3) The appearance of negative after-images between the series of experiments does not necessarily indicate that the process of adaptation had continued until the retina is no longer capable of reacting, as we constantly find these images appearing when we could still clearly see the color that induced them. His experiments seem then to be far from proving either that his conditions and those under which his so-called attention would arise are identical, or even that adaptation and eye-movement will explain his own observations.

This leaping at conclusions is still more evident in his investigation on the fluctuation of auditory impressions. The author found that he seemed to get the variations in the ticking of a watch at first, but soon noticed that the maxima coincided with a certain position of the balance wheel. He tried listening to several watches and even a chronometer and found that the ticking of all seemed to have fluctuations (apparently the ear was the only criterion). He concludes that all watches are alike in this respect and all earlier results are erroneous. He then prepared an electro-magnetic sounder, which he assumes gives constant intensities, and discovered no fluctuations. There was no attempt to obtain an objective measure of the intensity of the ticks of the watch and even if we are convinced of the correctness of his statement for one instrument it does not follow that all have the same peculiarity. The second apparatus is no more likely to give constant tone than the one used by Dr. Dunlap, and a man predisposed to a negative answer would hardly be likely to have the patience to search out the comparatively narrow range of tone intensities within which fluctuations occur.

While any investigation which points out unnoticed possible sources of error in older works should be welcome, it is nevertheless hazardous to announce negative results in a field so much worked over on the basis of a few hours' experiments.

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An Analysis of Elementary Psychic Process. A. E. DAVIES, *Psychological Review*, Vol. XII., No. 2-3, Mch.-May, 1905. Pp. 166-206.

The purpose of this investigation, the author states, is to ascertain something as to the nature of elementary conscious states. James has said that sensations are essentially 'cognitive.' Mr. Davies thinks that elementary phenomena of psychic character may be rather of an effective nature, or at least should be conceived as feeling processes.

In an experiment in a dark room, the attempt is made to find by introspection what comes first into consciousness. Momentary light stimulations are employed. The figures presented in this illuminated field were circles, crosses, stars, triangles, etc. Twenty-two observers were used, sixteen, however, for one hour only, and but two giving as many as six sittings. The conclusions reached are briefly the following: (a) The illumination comes before the perception of form. The conscious contents are differently experienced, and hence the first stage is not perception. The perception must grow before it can be defined. (b) We get an image by the large number and variety of movements connected with these elementary phenomena (p. 205). (c) These numerous *sensations* accompanying the various involved movements are thus related to the *feelings*, 'they are the feelings become objectified.' Feelings hence tend to 'pass beyond themselves.'

The author concludes in his summary (p. 206): (1) "That our most elementary psychic processes are feelings, which are not content, but intent of consciousness. (2) That feeling process eventuates in physiological changes which involve movements of the special sense and other organs, that these movements are, on the one hand, the objective side of feeling, and on the other, practical attitudes toward a present situation, the character of the reaction depending on the agreeableness or disagreeableness of the feeling process. (3) That these adjustments have psychic importance because of the kinesthetic sense material which through them becomes functional. (4) That with the complication of the sense data, these develop 'suggestions' which operate, under the guidance of *feeling*, as principles of its organization into definite products or perceptions."

It is not immediately clear to the reader just what, after all, this research has established. Why should not the illumination itself be merely a vague perception? That the subjects say it has at this stage some feeling-tone does not seem to exhaust the experience. To call elementary psychic states feelings which are not 'content but intent of consciousness' is but another name (and just as vague a one) for an undifferentiated experience. Again it is difficult to conceive how what is by nature not 'content' can 'pass over' into what is. And if it does, then its psychological importance really seems to rest in its 'cognitive' character.

Further, to say that the 'feeling process eventuates in physiological changes, etc.,' is but a reversal of the James-Langé theory of emotions, thereby suggesting that feeling is not itself connected in any way with sensation. The word 'feeling' thus used connotes simply vagueness, not

the affective character of psychic states. Tawney¹ has shown that such terminology does not tend to throw light upon the psychological elements of our mental states.

In paragraphs three and four of the summary, 'feelings' are apparently not a character of the 'kinesthetic sense material,' nor are they, as Wundt would claim, functions or 'principles of its organization.' The author prefers to designate as 'suggestions' that which arises from the 'complication of sense data,' and which is 'operative.' Feelings guide. The content is sense data, the product, perceptions, and feelings are simply that which causes the process to occur.

This being the case, there seems little reason to deny content of some sort to even elementary psychic process. Feelings could not 'guide' where there is nothing to guide. In short, it seems not to be possible to describe any psychic state, elementary or complex in terms either of feeling or cognition alone.

Those reported introspective notes of the present investigation seem, too, to be open to this interpretation. When 'suggestion,' or the associational element, entered into their experience of this bare vague illumination, clearly a perceptive character, even though illusory, entered in. When the feeling element entered, as in the judgments 'pleasant' or 'unpleasant,' there was *something* which *pleased* or *displeased*. 'Whiteness against the black,' or pleasure of monotonous darkness being broken, seem to suggest content. In the nature of the case very decided feeling of any sort could scarcely be any more definite than the perception, as the experience was only momentary.

The article is very interesting and suggests a point of view as to the nature of feeling. The statement that this is all one means by feeling or an expedient use of the term, many psychologists would undoubtedly call into question.

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JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. March, 1905, Vol. XIV., No.

2. *The Mission of Philosophy* (pp. 113-137): G. T. LADD. — "Two classes of judgments,—the judgments of fact and law, and the scientific conceptions and highest generalizations derived from such judgments, on the one hand, and, on the other hand, the value-judgments which satisfy the ethical, esthetical and religious sentiments, and which lead to the formation of ideals,—seem quite habitually to be in conflict. The task of philosophy is the perpetual readjustment of the relations between them, with a view to secure a higher and completer harmony." *The Content and Validity of the Causal Law* (pp. 138-165): BENNO ERDMAN. — Empirically conceived, cause should be defined as the immediate uniform antecedent. "Spinoza, the most consistent of dogmatic rationalists, finds

¹Cf. Tawney, G. A., 'Feeling and Self-Awareness,' *Psychological Review*, IX., 1902, pp. 570-596.

himself compelled in his formulation of the analytic interpretation of the causal relation handed down to him, to transform it into a mathematical one. Mach, the most consistent of recent German empiricists, finds himself compelled to recognize that the empirically synthetic relation between cause and effect includes no other form of dependence than that which is present in the functional mathematical relations. However, this agreement of two opposing views is no proof that empiricism is on the right road." [To be concluded.] *Proceedings of the Fourth Meeting of the American Philosophical Association* (pp. 166-194): Treasurer's account; election of officers; abstracts of papers; list of members. *The Metaphysical Status of Universals* (pp. 195-203): W. H. SHELDON. - "The universal is supposed by many to be not concrete, and, therefore, to have a lower metaphysical status than concrete individual facts or events. This supposition rests on a misapprehension of the nature of a universal. It should be defined not as a permanent entity incapable of complete realization in experience and indifferent thereto, but as a particular image or response plus a fringe, a suggestion of further possible similar images or responses, which the former, having been associated with similars, gradually acquired." *Reviews of Books*: Edward Caird, *The Evolution of Theology in the Greek Philosophers*: H. N. GARDINER. W. R. Sorley, *The Ethics of Naturalism and Recent Tendencies in Ethics*: JAMES SETH. Norman Smith, *Studies in the Cartesian Philosophy*: DAVID IRONS. *Summaries of Articles*. *Notices of New Books*. *Notes*.

ARCHIVES DE PSYCHOLOGIE, 1904. *Recherches sur le Sens olfactif de l'escayot (Helix Pomatia)* (pp. 1-78): EMILE YUNG. - History of the problem. Tactile sensibility is generalized on whole integument, but especially acute about the mouth and tentacles (antennæ). A second sense on the tentacles requires no contact with the substance perceived, and is sensitive to stimuli giving no such sensation to human beings. The long tentacles are somewhat more sensitive than the short ones. Experimental determination of smell sensitivity to favorable and unfavorable substances. Smell is not wholly localized in the tentacles, vestiges remaining in their absence. Microscopic anatomy of sense organs. *Les rapports du mental et due physique* (pp. 92-100): ED. CLAPAREDE. - A short discussion of the psychophysical parallelism and related theories, inclining to the former, though recognizing its defects. *Des Phénomènes de Paramnésie* (pp. 100-109): AUG. LEMAITRE. - The phenomena of fausse reconnaissance studied on a subject somnambulistic in childhood, an attack of scarlatina changing the abnormality to the form considered. Dissent from the theory of double perception. Paramnesia may be a true representation of previous experience, but the first state is received and retained in subconscious memory, *i. e.*, while the subject was distracted or dreaming. There is conscious recrudescence of an experience at first subconscious. These unconscious experiences occur in general but shortly before their recrudescence, appearing, however, to belong to the remote past. *De la Mémoire* (pp. 145-163): J. LARGUIER DES BANCELS. - The antithesis of organic and inorganic matter is not absolute. Memory, a

characteristic function of organic matter, has its analogues in inorganic nature, there being a continuum from one to the other. The recognition of this plasticity is essential to many physicochemical concepts. *Recherches Expérimentales sur l'Educabilité et la Fidélité du Témoignage* (pp. 234-314): MARIE BORST. - History of problem and exposition of various methods of experiment. Reliable deposition is a rare exception; every witness supplies the gaps in the memory. There is a tendency to make the sequence of events more logical or dramatic. Testimony increases in reliability with practice. About one tenth of the replies of a willing witness are false. Narrative is more reliable than examination. Testimony of women is more complete and reliable than that of men. The quantity and quality of testimony are usually inversely related. One twelfth of all sworn statements are false. *Un cas d'Audition Colorée Hallucinatoire* (pp. 164-177): AUG. LEMAITRE. - Subject, a boy of fourteen; pseudochromæsthesia appearing at eleven, no pseudochromæsthesic heredity. Exists only for linguistic enunciations by others than himself. Colors very variable. In another case the colors are very constant, according to table of chromatic complements of words at yearly intervals for four years. Pseudochromæsthesia may admit of a physiological explanation as an intimate association between linguistic and visual centers.

REVUE DE PHILOSOPHIE. February, 1905. *Le Rôle des Paradoxes dans la Philosophie* (pp. 127-134): G. VAILATI. - Many axioms which at first appear to contradict the self-evident are later seen not to do so. This has often been the case in mathematics. *La pensée philosophique et la pensée mathématique* (pp. 135-148): X. MOISANT. - Philosophy, like mathematics, requires abstraction; but unlike mathematics it must synthesize abstractions into an organic system. Again, unlike mathematics, it should reveal the personal attitude of the thinker toward life as a whole. *Exposé critique des principales objections contre la théorie du neurone* (pp. 149-162): E. BALTUS. - Discussion of objections to the neuron theory. On the whole, though the problem is yet unsettled, the nerve-element probably must be an independent structural unit. *Réflexions critiques sur ballanche et le ballanchisme* (pp. 163-170): P. VULLIAUD. A criticism of Frainet's estimate of Ballanche, in the *Essai sur la Philosophie de P.-S. Ballanche*. *Apropos de l'Atmosphère métaphysique des Sciences naturelles: Lettre de X. Moisant, Réponse de M. Vignon*. Analyses et Comptes Rendus: F. Brunetière, *L'utilisation du positivisme*: J. GARDAIR. H. Brémond, *Newman, le développement du dogme chrétien*: J. V. BAINVEL. F. le Dantec, *Les influences ancestrales*: F. MENTRÉ. P. Jacoby, *Etudes sur la Sélection chez l'Homme*: F. MENTRÉ. F. Klein, *Au Pays de 'la Vie intense'*: E. A. Périodiques anglais. Bulletin de l'Enseignement philosophique. *Paul Tannery*: Chronique. Ve Congrès International de Psychologie.

REVUE DE PHILOSOPHIE. March, 1905. *Allocution au Congrès de Philosophie de Genève* (pp. 235-242): E. NAVILLE. - Theory and practice should not be divorced; one's philosophy should be one's life. Unity

and harmony of the sciences should be strengthened. Philosophy preserves us from the narrowness of over-specialization. *Hoene-Wronski et Lamennais* (pp. 243-258): W. KOZŁOWSKI. — J. Bertrand's judgment of Wronski as a fool is superficial; this is shown by Wronski's criticisms of Lamennais. Wronski was an extremist and somewhat misled by the fervor of his own convictions. *L'unité de la philosophie et la théorie de la connaissance* (pp. 259-266): L. M. BILLIA. — Every thinker who desires a system betrays a belief in the fundamental oneness of the universe. The nature of knowledge, which is systematization essentially, is the whole philosophic problem. But true knowledge has for its object perfection, or righteousness. Thus the *scientia prima* is ethics. *La théorie physique: son objet et sa structure* (pp. 267-292): P. DUHEM. — A physicist can not work by mere observation without any theory, as a physiologist can; for the use of instruments in physics implies the acceptance of a whole group of theories. Alternative theories in regard to a fact are always more than two in number; therefore, there are no *experimenta crucis* ruling out all theories but one. Physical theories exist by groups or systems. *La crise du droit naturel* (pp. 293-298): CH. BOUCAUD. — Definitions of natural right should be verified by a positive study of human history and psychology; but this does not invalidate ideals which have been devised by speculative philosophy, for the latter is itself a part of human history and psychology. *Analyses et Comptes Rendus*: Mgr. Mercier, *Ontologie, ou Métaphysique générale*: D. V. F. QUEYRAT, *Les Jeux des Enfants*: T. DE VISAN. A. Bazaillas, *La Vie personnelle*. H. Sidgwick, *Lecture on Ethics of Green, Spencer and Martineau*: H. LÉARD. E. Lauvrière, *Edgar Poe*: P. CHAINE. E. Thouverez, *Les grandes Philosophes, H. Spencer*. *Atti del Congresso internazionale di Scienze storiche Vol. XI., Vol. XII.*: F. MENTRÉ. A. Bernard, *Leçons de Philosophie*: T. DE VISAN. Périodiques anglais. Périodiques américains. Sommaire des Revues. Bulletin de l'Enseignement philosophique.

REVUE PHILOSOPHIQUE. February, 1905. *La paix et la guerre* (pp. 114-132): CH. RICHET. — Perpetual peace is possible and desirable, from both psychological and social points of view. Military virtues are found in industrial and professional life; military vices are not. War is sorrow alike to victor and victim. *Essais d'esthétique empirique* (pp. 133-146): VERNON LEE. — Esthetic pleasure must arouse or suggest some one of the many useful activities of life. It is not the work of art itself, but the activities suggested by it, which give us esthetic pleasure. This is the teaching of empirical esthetics, which studies the psychology of the individual in the presence of the work of art. *Autorité et liberté* (pp. 147-179): CH. DUNAN. — The conception of God as author, creator, has gradually been replaced by that of God as the spirit of eternal justice, the idea of ideas; who does not exist, but is most real. The authority of an existent God gives way to the freedom we all share, as rational beings, with this universal reason. *Revue Critique: Les besoins et les tendances dans l'économie sociale* (pp. 180-189): M. HALBWACHS. — Criticism of Schmoller's *Grundriss der allgemeinen Volkswirtschaftslehre*. *Analyses et*

Comptes Rendus: *L'Année philosophique*: J. DELVAILE. A Rist, *La Philosophie naturelle intégrale et les Rudiments des Sciences exactes*: G. M. P. Stern, *Das Problem der Gegebenheit*: G. H. LUQUET. Ch. Féré, *Travail et plaisir*: P. CHASLIN. Dr. Nuel, *La Vision*: B. BOURDON. Toulouse, Vaschide et Piéron, *Technique de Psychologie expérimentale*: B. BOURDAN. A Renda, *La Dissociazione psicologica*: TH. RIBOT. V. Mercante, *Psicologia de la Aptitud matemática del Niño*: J. PÉRÈS. Ch. Rapport, *La Philosophie de l'Histoire comme Science de l'Evolution*: CH. LALO. R. Loening, *Geschichte der strafrechtlichen Zurechnungslehre*: A. LEVI. *Delitto e Pena nel Pensiero dei Greci*: G. RICHARD. Abbé Piat, *Aristote*: F. PICAUVET. Revue des Périodiques Etrangers. Livres Déposés.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. March, 1905, Band 37, Heft 5. *Psychophysiologische Untersuchungen über die Bedeutung des Statolithenapparates für die Orientierung im Raume an Normalen und Taubstummen* (pp. 321-362): G. ALEXANDER and R. BÁRÁNY. - Determination of accuracy with which direction of lines drawn on forehead or optical stimuli could be perceived when the head or body is inclined at varying angles. Comparative study on normal persons and deaf mutes aims to discover 'rôle played by the static organ in orientation in space.' *Zur experimentellen Kritik der Theorie der Aufmerksamkeitschwankungen* (pp. 363-376): BERTIL HAMMER. - Fluctuations of attention to visual stimuli are due to retinal fatigue and changes of fixation, the latter causing the recurrence. In the sense of hearing there are no fluctuations of attention. Literaturbericht.

Jauman, G. *Die Grundlagen der Bewegungslehre*. Leipzig: J. A. Barth. 1905. 8vo. Pp. vi + 421. 12 M.

Krauss, S. *Théodule Ribots Psychologie*. Jena: Costenoble. 1905. 8vo. Pp. x + 170. 4 M.

Kronenberg, M. *Ethische Präludien*. München: Beck. 1905. 8vo. Pp. vii + 322. 5 M.

Lukas, T. *Psychologie der niedersten Tiere*. Wein und Leipzig: Braumüller. 1905. 8vo. Pp. viii + 276. 5 M.

McDougall, W. *Physiological Psychology*. Temple Primers. New York: The Macmillan Co. 1905. 18mo. Pp. viii + 172. \$0.40 net.

Poincaré, H. *Leçons de mécanique céleste*. Paris: Gauthier-Villars. 1905. 8vo. Pp. 365. 12 fr.

NOTES AND NEWS

THE Board of Directors of the Kant-Gesellschaft has decided to offer a prize of 500 M. for the best essay on the theme 'Kant's Conception of Knowledge Compared with that of Aristotle.' The competition will

close on October 1, 1906, and the award announced on April 22, 1907. The essay may be written in German, French, Italian, or English, and should be sent to the Kuratorium of the University of Halle. Professors Heinze, Riehl and Vaihinger will be the judges of the competition. Further information regarding the competition may be secured by addressing Professor Vaihinger.

THE North Central Branch of the American Psychological Association met on Saturday, April 22, 1905, at the University of Chicago. The following papers were read: 'The Perception of Reality,' J. D. Stoops; 'The Irradiation of Light,' Foster Boswell; 'Report on Recent Work on the Growth of the Nervous System,' H. H. Donaldson; 'The Wundt Pendulum Complication Apparatus as Tested by the Duddell Oscillograph,' W. D. Scott; 'Pragmatism and its Critics,' A. W. Moore; 'Development of Ethical Sentiment in the Child,' M. V. O'Shea; 'Feeling as Emotion and Sentiment: A Neglected Chapter in Psychology,' L. C. Monin; 'Racial Differences in the Upper Limit of Audibility,' F. G. Bruner.

THE second volume of 'Philosophy at the Beginning of the Twentieth Century' the *Festschrift* dedicated to Professor Kuno Fischer on his eightieth birthday, lately issued, contains the following papers: 'Rechtsphilosophie,' by Dr. Emil Lask; 'Geschichtsphilosophie,' by Professor H. Rickert; 'Æsthetik,' by Professor Karl Groos; and 'Geschichte der Philosophie,' by Professor W. Windelband.

MR. L. A. WEIGLE, assistant in the Yale Psychological Laboratory, has accepted a professorship in philosophy at Carlton College, Minn. Mr. Weigle will complete the work for the doctorate in philosophy at Yale in June.

SIR W. C. MACDONALD has given funds to the McGill University for the endowment of a psychological laboratory and for the extension of the library of the Philosophical Department.

DR. K. MARBE, professor in philosophy in the University of Würzburg, has been called to the Academy of Social and Industrial Science in Frankfort.

THE annual conference of the British Child-Study Association will be held at Derby on May 11-13, under the presidency of Professor Muirhead, of Birmingham University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE PLACE OF AFFECTIONAL FACTS IN A WORLD OF PURE EXPERIENCE

COMMON sense and popular philosophy are as dualistic as it is possible to be. Thoughts, we all naturally think, are made of one kind of substance, and things of another. Consciousness, flowing inside of us in the forms of conception or judgment, or concentrating itself in the shape of passion or emotion, can be directly felt as the spiritual activity which it is, and known in contrast with the space-filling objective 'content' which it envelopes and accompanies. In opposition to this dualistic philosophy, I tried, in a recent article in this JOURNAL,¹ to show that thoughts and things are absolutely homogeneous as to their material, and that their opposition is only one of relation and of function. There is no thought-stuff different from thing-stuff, I said; but the same identical piece of 'pure experience' (which was the name I gave to the *materia prima* of everything) can stand alternately for a 'fact of consciousness' or for a physical reality, according as it is taken in one context or in another. For the right understanding of what follows, I shall have to presuppose that the reader will have read that earlier article.²

The commonest objection which the doctrine there laid down runs up against is drawn from the existence of our 'affections.' In our pleasures and pains, our loves and fears and angers, in the beauty, comicality, importance or preciousness of certain objects and situations, we have, I am told by many critics, a great realm of experience intuitively recognized as spiritual, made, and felt to be made, of consciousness exclusively, and different in nature from the space-filling kind of being which is enjoyed by physical objects. In Section VII. of that earlier article, I treated of this class of experiences very inadequately, because I had to be so brief. I now return to the subject, because I believe that, so far from invalidating my general thesis, these phenomena, when properly analyzed, afford it powerful support.

¹ 'Does Consciousness Exist?' Vol. I., p. 477.

² It will be still better if he shall have also read the article entitled 'A World of Pure Experience,' which follows that one and develops its ideas still farther. See this JOURNAL, Vol. I., pp. 533, 561.

The central point of the pure-experience theory is that 'outer' and 'inner' are names for two groups into which we sort experiences according to the way in which they act upon their neighbors. Any one 'content,' such as *hard*, let us say, can be assigned to either group. In the outer group it is 'strong,' it acts 'energetically' and aggressively. Here whatever is hard interferes with the space its neighbors occupy. It dents them; is impenetrable by them; and we call the hardness then a physical hardness. In the mind, on the contrary, the hard thing is nowhere in particular, it dents nothing, it suffuses through its mental neighbors, as it were, and interpenetrates them. Taken in this group we call both it and them 'ideas' or 'sensations'; and the basis of the two groups respectively is the different type of interrelation, the mutual impenetrability, on the one hand, and the lack of physical interference and interaction, on the other.

That what in itself is one and the same entity should be able to function thus differently in different contexts is a natural consequence of the extremely complex reticulations in which our experiences come. To her offspring a tigress is tender, but cruel to every other living thing—both cruel and tender, therefore, at once. A mass in movement resists every force that operates contrariwise to its own direction, but to forces that pursue the same direction, or come in at right angles, it is absolutely inert. It is thus both energetic and inert; and the same is true (if you vary the associates properly) of every other piece of experience. It is only towards certain specific groups of associates that the physical energies, as we call them, of a content are put forth. In another group it may be quite inert.

It is possible to imagine a universe of experiences in which the only alternative between neighbors would be either physical interaction or complete inertness. In such a world the mental or the physical *status* of any piece of experience would be unequivocal. When active, it would figure in the physical, and when inactive, in the mental group.

But the universe we live in is more chaotic than this, and there is room in it for the hybrid or ambiguous group of our affectional experiences, of our emotions and appreciative perceptions. In the paragraphs that follow I shall try to show:

(1) That the popular notion that these experiences are intuitively given as purely inner facts is hasty and erroneous; and

(2) That their ambiguity illustrates beautifully my central thesis that subjectivity and objectivity are affairs not of what an experience is aboriginally made of, but of its classification. Classifications depend on our temporary purposes. For certain purposes it is convenient to take things in one set of relations, for other purposes in

another set. In the two cases their contexts are apt to be different. In the case of our affectional experiences we have no permanent and steadfast purpose that obliges us to be consistent, so we find it easy to let them float ambiguously, sometimes classing them with our feelings, sometimes with more physical realities, according to caprice or to the convenience of the moment. Thus would these experiences, so far from being an obstacle to the pure-experience philosophy, serve as an excellent corroboration of its truth.

First of all, then, it is a mistake to say, with the objectors whom I began by citing, that anger, love and fear are affections purely of the mind. That, to a great extent at any rate, they are simultaneously affections of the body is proved by the whole literature of the James-Lange theory of emotion. All our pains, moreover, are local, and we are always free to speak of them in objective as well as in subjective terms. We can say that we are aware of a painful place, filling a certain bigness in our organism, or we can say that we are inwardly in a 'state' of pain. All our adjectives of worth are similarly ambiguous—I instanced some of the ambiguities on page 490 of the former article. Is the preciousness of a diamond a quality of the gem? or is it a feeling in our mind? Practically we treat it as both or as either, according to the temporary direction of our thought. 'Beauty,' says Professor Santayana, 'is pleasure objectified'; and in Sections 10 and 11 of his work, 'The Sense of Beauty,' he treats in a masterly way of this equivocal realm. The various pleasures we receive from an object may count as 'feelings' when we take them singly, but when they combine in a total richness, we call the result the 'beauty' of the object, and treat it as an outer attribute which our mind perceives. We discover beauty just as we discover the physical properties of things. Training is needed to make us expert in either line. Single sensations also may be ambiguous. Shall we say an 'agreeable degree of heat,' or an 'agreeable feeling' occasioned by the degree of heat? Either will do; and language would lose most of its esthetic and rhetorical value were we forbidden to project words primarily connoting our affections upon the objects by which the affections are aroused. The man is really hateful; the action really mean; the situation really tragic—all in themselves and quite apart from our opinion. We even go so far as to talk of a weary road, a giddy height, a jocund morning or a sullen sky; and the term 'indefinite' while usually applied only to our apprehensions, functions as a fundamental physical qualification of things in Spencer's 'law of evolution,' and doubtless passes with most readers for all right.

Psychologists, studying our perceptions of movement, have unearthed experiences in which movement is felt in general but not

ascribed correctly to the body that really moves. Thus in optical vertigo, caused by unconscious movements of our eyes, both we and the external universe appear to be in a whirl. When clouds float by the moon, it is as if both clouds and moon and we ourselves shared in the motion. In the extraordinary case of amnesia of the Rev. Mr. Hanna, published by Sidis and Goodhart in their important work on 'Multiple Personality' (New York: Appleton, 1905) we read that when the patient first recovered consciousness and "noticed an attendant walk across the room, he identified the movement with his own. He did not yet discriminate between his own movements and those outside himself" (p. 102). Such experiences point to a primitive stage of perception in which discriminations afterwards needful have not yet been made. A piece of experience of a determinate sort is there, but there at first as a 'pure' fact. Motion originally simply *is*; only later is it confined to this thing or to that. Something like this is true of every experience, however complex, at the moment of its actual presence. Let the reader arrest himself in the act of reading this article now. *Now* this is a pure experience, a phenomenon, or datum, a mere *that* or content of fact. '*Reading simply is, is there*; and whether there for some one's consciousness, or there for physical nature, is a question not yet put. At the moment, it is there for neither; later we shall probably judge it to have been there for both.

With the affectional experiences which we are considering, the relatively 'pure' condition lasts. In practical life no urgent need has yet arisen for deciding whether to treat them as rigorously mental or as rigorously physical facts. So they remain equivocal; and, as the world goes, their equivocality is one of their great conveniences.

The shifting place of 'secondary qualities' in the history of philosophy is another excellent proof of the fact that 'inner' and 'outer' are not coefficients with which experiences come to us aboriginally stamped, but are rather results of a later classification performed by us for particular needs. The common-sense stage of thought is a perfectly definite practical halting-place, the place where we ourselves can proceed to act unhesitatingly. On this stage of thought things act on each other as well as on us by means of their secondary qualities. Sound, as such, goes through the air and can be intercepted. The heat of the fire passes over, as such, into the water which it sets a-boiling. It is the very light of the arc-lamp which displaces the darkness of the midnight street, etc. By engendering and translocating just these qualities, actively efficacious as they seem to be, we ourselves succeed in altering nature so as to suit us; and until more purely intellectual, as distinguished from practical,

needs had arisen, no one ever thought of calling these qualities subjective. When, however, Galileo, Descartes, and others found it best for philosophic purposes to class sound, heat and light along with pain and pleasure as purely mental phenomena, they could do so with impunity.

Even the primary qualities are undergoing the same fate. Hardness and softness are effects on us of atomic interactions, and the atoms themselves are neither hard nor soft, nor solid nor liquid. Size and shape are deemed subjective by Kantians; time itself is subjective according to many philosophers; and even the activity and causal efficacy which lingered in physics long after secondary qualities were banished are now treated as illusory projections outwards of phenomena of our own consciousness. There are no activities or effects in nature, for the most intellectual contemporary school of physical speculation. Nature exhibits only *changes*, which habitually coincide with one another so that their habits are describable in simple 'laws.'

There is no original spirituality or materiality of being, intuitively discerned, then; but only a translocation of experiences from one world to another; a grouping of them with one set or another of associates for definitely practical or intellectual ends.

I will say nothing here of the persistent ambiguity of *relations*. They are undeniable parts of pure experience; yet, while common sense and what I call radical empiricism stand for their being objective, both rationalism and the usual empiricism claim that they are exclusively the 'work of the mind'—the finite mind or the absolute mind, as the case may be.

Turn now to those affective phenomena which more directly concern us.

We soon learn to separate the ways in which things appeal to our interests and emotions from the ways in which they act upon one another. It does not *work* to assume that physical objects are going to act outwardly by their sympathetic or antipathetic qualities. The beauty of a thing or its value is no force that can be plotted in a polygon of compositions, nor does its 'use' or 'significance' affect in the minutest degree its vicissitudes or destiny at the hands of physical nature. Chemical 'affinities' are a purely verbal metaphor; and, as I just said, even such things as forces, tensions and activities can at a pinch be regarded as anthropomorphic projections. So far, then, as the physical world means the collection of contents that determine in each other certain regular changes, the whole collection of our appreciative attributes has to be treated as falling outside of it. If we mean by physical nature whatever lies beyond the surface

of our bodies, these attributes are inert throughout the whole extent of physical nature.

Why then do men leave them as ambiguous as they do, and not class them decisively as purely spiritual?

The reason would seem to be that, although they are inert as regards the rest of physical nature, they are not inert as regards that part of physical nature which our own skin covers. It is those very appreciative attributes of things, their dangerousness, beauty, rarity, utility, etc., that primarily appeal to our attention. In our commerce with nature these attributes are what give *emphasis* to objects; and for an object to be emphatic, whatever spiritual fact it may mean, means also that it produces immediate bodily effects upon us, alterations of tone and tension, of heart-beat and breathing, of vascular and visceral action. The 'interesting' aspects of things are thus not wholly inert physically, though they be active only in these small corners of physical nature which our bodies occupy. That, however, is enough to save them from being classed as absolutely non-objective.

The attempt, if any one should make it, to sort experiences into two absolutely discrete groups, with nothing but inertness in one of them and nothing but activities in the other, would thus receive one check. It would receive another as soon as we examined the more distinctively mental group; for though in that group it be true that things do not act on one another by their physical properties, do not dent each other or set fire to each other, they yet act on each other in the most energetic way by those very characters which are so inert extracorporeally. It is by the interest and importance that experiences have for us, by the emotions they excite, and the purposes they subserve, by their affective values, in short, that their consecution in our several conscious streams, as 'thoughts' of ours, is mainly ruled. Desire introduces them; interest holds them; fitness fixes their order and connection. I need only refer for this aspect of our mental life, to Wundt's article 'Ueber psychische Causalität,' which begins Volume X. of his *Philosophische Studien*.³

It thus appears that the ambiguous or amphibious *status* which we find our epithets of value occupying is the most natural thing in the world. It would, however, be an unnatural status if the popular opinion which I cited at the outset were correct. If 'physical' and 'mental' meant two different kinds of intrinsic nature, immediately, intuitively, and infallibly discernible, and each fixed forever in

³ It is enough for my present purpose if the appreciative characters but seem to act thus. Believers in an activity *an sich*, other than our mental experiences of activity, will find some farther reflections on the subject in my address on 'The Experience of Activity' in the *Psychological Review* for January, 1905.

whatever bit of experience it qualified, one does not see how there could ever have arisen any room for doubt or ambiguity. But if, on the contrary, these words are words of sorting, ambiguity is natural. For then, as soon as the relations of a thing are sufficiently various it can be sorted variously. Take a mass of carrion, for example, and the 'disgustingness' which for us is part of the experience. The sun caresses it, and the zephyr wooes it as if it were a bed of roses. So the disgustingness fails to *operate* within the realm of suns and breezes,—it does not function as a physical quality. But the carrion 'turns our stomach' by what seems a direct operation—it *does* function physically, therefore, in that limited part of physics. We can treat it as physical or as non-physical according as we take it in the narrower or in the wider context, and conversely, of course, we must treat it as non-mental or as mental.

Our body itself is the palmary instance of the ambiguous. Sometimes I treat my body purely as a part of outer nature. Sometimes, again, I think of it as 'mine,' I sort it with the 'me,' and then certain local changes and determinations in it pass for spiritual happenings. Its breathing is my 'thinking,' its sensorial adjustments are my 'attention,' its kinesthetic alterations are my 'efforts,' its visceral perturbations are my 'emotions.' The obstinate controversies that have arisen over such statements as these (which sound so paradoxical, and which can yet be made so seriously) prove how hard it is to decide by bare introspection what it is in experiences that shall make them either spiritual or material. It surely can be nothing intrinsic in the individual experience. It is their way of behaving towards each other, their system of relations, their function; and all these things vary with the context in which we find it opportune to consider them.

I think I may conclude, then (and I hope that my readers are now ready to conclude with me), that the pretended spirituality of our emotions and of our attributes of value, so far from proving an objection to the philosophy of pure experience, does, when rightly discussed and accounted for, serve as one of its best corroborations.

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ON THE DISCRIMINATION OF CRITICAL AND CREATIVE ATTITUDES

THE activities of the artist and of the scientist are many-sided and their relations so complex that a multitude of contrasts may readily be acknowledged to exist between them. Were these differences unrelated, an adequate discrimination of their provinces would be possible only through an exhaustive enumeration of their

points of divergence. If, on the other hand, the various manifestations of each attitude are systematically connected, it should be possible to point to some broad and simple distinction in method or point of view upon which this profusion of contrasted characters depends, and by which the affiliations of any particular bit of experience may be determined.

If among the manifold attitudes of the human will a fundamental principle of differentiation be sought, we shall find ourselves habitually making a twofold division of the forms of subjective experience. It is hard to give a name to these discriminated types; no term is adequate and exclusive. The one is what the subject is conscious of; the other, what he is concerned with. These terms represent different aspects of experience, not events distinct in time; for the two are inseparable moments of every content of experience.

Out of this discrimination of attitudes arises a derivative distinction between aspects of the content of consciousness which we call *existence* (what one is conscious of) and *worth* (what one is concerned with). With existence the perceptive subject is engaged. Here one strips oneself as far as possible of all personal attitude toward the experience. The event is viewed as purely objective, alike for a multitude of observers; and in the ideal process is sought the most adequate representation of these universally valid relations. Worth concerns the active subject. From this point of view the experience is treated solely as an object of will, a motive. Its significance lies in the direction and amount of its force as an impulse to activity. It is a moment in a constructive life.

In dependence upon the discrimination of these aspects of experience arise two different modes of regarding any object or process of the world. From the first point of view it is looked upon as a totality having purpose and significance, all parts being organic to one end. The reality of the thing under this conception lies in its unity. The constituent elements by themselves are meaningless. They exist only as parts which receive significance through the whole. From the second point of view the object or event is regarded as potentially a group of elements, not as a significant unity. Its standpoint is atomistic. The totality exists only to be analyzed, to be reduced to its constituents, whether material or causal. It is of the latter that permanent existence is strictly to be predicated, and this in proportion to their simplicity and universality. The form of their combination is a teleological unity depending for its appearance upon the selective point of view of the human will and suffering transformation from moment to moment as the purpose of that will fluctuates.

Every activity which embodies the former point of view deals

with phenomena in a creative way; every application of the latter concept is a treatment of experience from the critical point of view. By the creative attitude, then, is meant all activity which seeks to convey the unitary significance of the thing or event. Its aim is to set the object or process forth in such a manner that the effect which it produced upon the constructively apperceptive subject shall be passed over to the observer. The critical activity, on the contrary, is concerned wholly with the analysis of experience into its phenomenal elements. With its significance, that is to say, its value as dependent upon any such selective point of view, criticism has as little to do as possible. Its single function is the determination of uniformities of connection between phenomena through processes of analysis. It seeks always to dissolve the structure of experience and to exhibit its irreducible elements in their relation to one another. The unanalyzed object may be a thing of interest, of beauty or of worth; it can not be the subject of any form of descriptive or critical activity.

Both the description of experience and its interpretation are forms of reorganization by the purposeful human will. Creative and critical activity alike dissolve the continuity of actual experience for the purpose of rearranging its elements in an ideal order. The attitudes of artist and scientist, which share in this common attribute of ideal reorganization, are to be discriminated by the motives which underlie their special forms of synthesis, and by the criteria which determine the order in which their materials are arranged. The critical activity seeks a logical reconstruction of experience for the purpose of description, and in response to the demand of the human spirit to understand its world. The creative activity undertakes a sentimental reconstruction of experience for the purpose of producing a mood and in response to the demand of the human spirit to enjoy its world. By the term artist is here meant all who thus deal with experience in a creative way; by scientist, all who deal with it in a critical way. The terms apply also, of course, to all moods and successive moments of the individual life in which, as may alternately occur, the treatment of experience is now logical and then sentimental.

Scientific work is a function of the subject as perceptive, and has to do with the existence of phenomena. The direction of activity is toward understanding, the objective expression of which is knowledge. One's aim is to describe through generalizations or laws. The object of a description is fact. Its criteria are exactitude and completeness. Accomplishment is truth; failure is error. Artistic work is a function of the subject as active and is always an expression in some form of the worth of experience. The will is directed

toward use and enjoyment through the products of the creative activity. One's intention in relation to such a product is solely to estimate on the basis of ideals. The result of an estimation is value. Its criteria are sincerity and power. Accomplishment is holiness (wholeness); failure is sin. We have here two sets of terms corresponding to each other, which may be set in opposite columns as indicative of the two contrasted forms of activity, and as determining the terminology of the two great classes of writing which DeQuincy has called, respectively, the literature of knowledge and the literature of power.

The nature of critical activity will perhaps not be in doubt, but the limits of creative expression and the implications of its attitude are less evident. The artist's aim, whether in his esthetic appeal to the apperceptive personality or in his ethical appeal to the constructive personality, is to affect, to impress, to move. The selection of his material and the method of his arrangement are both dominated by this one purpose. In the province of esthetic creation it is the aim of the artist so to present the thing or event that the effect produced upon him by the contemplation or experience of it shall be passed over to the beholder. He seeks, in short, to communicate his own mood. In the province of ethical creation, on the other hand, it is the artist's function to communicate his own will. His aim is so to present the thing or event that it shall be effective in transforming the activity of the subject to whom it is addressed. Not truth, but power is at the heart of all artistic activity; not to understand, but to feel and to use, constitute one the recipient of the creative impulse. Truth, indeed, must be there, but it is truth of impression, which is sincerity, not truth of description.

The two moods, critical and creative or appreciative, are indeed mutually incompatible. Experience presents only successive translations from the one point of view to the other, never the combination of the two. The artist as such can not so apprehend the relations of the object of his contemplation as to rationalize his preference. He ceases to be in the attitude of artist the moment he undertakes to analyze the nature and basis of his judgment of worth. He is no longer creator, but critic; for he has ceased to enjoy his experience, and become merely an observer of it. For equally of the scientist must it be said that the contemplation of the relations discovered by his analysis as sources of enjoyment means his instant translation to the artistic point of view. The

'. . . Lone watcher of the skies
When a new planet swims into his ken,'

if in the mood which Keats conceives to be his, is simple poet. The descriptive fact lies wholly in abeyance; for him the romance of the

experience and its sublimity are the only realities of the moment. Science can take account of none of these things. For it emotion is a sum of phenomenal elements; the moral will is a complex reaction resolvable into a set of causal connections. Science neither estimates nor determines values; it apprehends neither dignity, nor use, nor goodness, nor beauty in its objects. Its world is there to be weighed and measured, not to be appreciated and enjoyed.

In explaining the useful classification of sciences as descriptive and normative it has sometimes been said that the former, such as astronomy, natural history, philology and psychology, describe facts; while the latter, such as grammar, logic, esthetics and ethics, prescribe values. Grammar, for example, does not inquire how men do, as a matter of fact, use words, or how they have used them in the past; such is the office of philology, a descriptive science. On the contrary, it prescribes how one ought to use his words. Hence the alternative title 'prescriptive' science. In such a classification, the work of the sciences contained in the latter group is confused with those aspects of the undivided human life which it is their function to describe, with the arts of correct speaking, of good taste and of right living. Ethics never seeks to prescribe ideals of human conduct, to determine what shall constitute our notion of good or evil. It aims only to analyze the already existing phenomenon of moral judgment. Esthetics aims only to determine the form of the beautiful object and the nature and basis of its impression as an actual experience which men share in common. There is no science but descriptive science and analysis is its method.

The work of science is the transcription of the objectified world of experience, in terms of its temporal and causal correlations. The work of art is the representation of human emotion or purpose through the symbols of the external world. This peculiar and characteristic difference in the ends toward which their activities are directed is forced upon our notice in every comparison of artistic and scientific work. The aim of the latter is to give a systematically completed description of phenomena. It is not simply those properties of the thing which may work him advantage or injury that the scientist studies, but the whole system of relations in which it stands to other existing things. It can not be said that no difference in rank exists in the scientist's world, that all facts are of equal value to him. Wherever systematization appears there must be subordination of lower to higher. In the end, perhaps, the criterion of worth in the two fields is the same, namely, richness of relationship. For the scientist that is the higher, the more important, which involves the greater range of implications. It is the deeper relation, the wider law; and the goal of his inquiry is the universal law,

the complete expression of the relatedness of the world. His work is not perfected until he has brought every object and event into connection with all other existences. The science to which each individual contributes is a systematic unity. Every property discovered, every relation established, implies all preceding work as its condition, and itself gives further validity and significance to that body of knowledge.

In art no such transcendent unity appears, but, on the contrary, irreconcilable rivalry and exclusiveness. Mood succeeds mood without fusing, the one artistic conception replaces the other instead of combining with it to form a greater whole. The object of esthetic contemplation is such in virtue only of its embodiment of this very ideal of complete self-dependence. The fundamental principle in the composition of a picture, in the construction of a monument, in the writing of a poem, in the formation of character, is the pervasive unity of it, wherein all the functions of its parts are comprehended and fulfilled. The art-product is a closed system in which every impulse finds satisfaction because each thought which penetrates it is reflected backward, and finds its object ultimately within the circle of elements which the work comprises.

No such unity is conceivable in the special sciences. The description of an isolated thing is impossible. It is perceived at once to be a fragment. Its relations must be broken off on every side if it is to be lifted into solitary view. In this lies the fundamental distinction between the critical and creative attitudes. The scientist explains the individual object by integrating it with a wider system; the artist interprets a wider system by representing it in an individual object. Science therefore expresses itself in abstract universals, but art in concrete particulars. Nothing less than the whole will serve science as an ideal; in art a sketch, a microcosm may reveal the type more perfectly than the finished portrait or the macrocosm.

The function of the artist, then, is so to select and represent the single object, the individual experience, that it shall exhibit the universal, and so stimulate the imagination of all who have shared in its experience.

This delight in the single object, its acceptance as representing the universe, is wholly foreign to science. Yet the underlying motive of all description, of all explanation, is the desire for unity, a unity never attained, but foreshadowed and involved in every synthesis, for the attempt at explanation is the expression of a striving to view the world as one rational system. It is, therefore, a unity which becomes more definite as the description of the world grows more comprehensive and adequate. The perfect science is

the complete expression of existence, a knowledge which can be stated only as the apprehension of that existence in the form of an artistic whole; not as the elusive sense which sometimes thrills one with the feeling that the significance of existence lies at the moment within his grasp, a mystic insight which can not be put into intellectual terms; but in that adequate realization of the inconceivably manifold relations of the world which we ascribe to the divine mind. The apprehension of existence as such a unity, a system in which the meaning of every part lies wholly within the system and nothing leads the contemplative mind beyond its bounds, is what I understand by the esthetic attitude; the system which can thus be contemplated is what I understand by the artistic object. In their ultimate motives, therefore, the two forms of activity have a common meeting-place, and the appreciative contemplation of the world of reality becomes the crown and completion of scientific work.

ROBERT MACDOUGALL.

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AN UNUSUAL FEATURE OF THE HYPNAGOGIC STATE

EVER since the time of Maury considerable aid in understanding dream processes has been afforded by the study of the hypnagogic state. Save that the onset of sleep brings with it the distinctive feature of the dream, namely its illusory sense of reality together with all the subsidiary characteristics that this immediately involves,—save in this respect the hypnagogic state offers a rather exact parallel to the dream itself. In both is there the reproduction of the unusually vivid impressions of the day. In both is there the heightened clearness and intensity of the various types of imagery peculiar to the individual. Indeed, this last phenomenon is so marked that, as Myers has pointed out, we first get revelations of our visualizing power by noting the phantasmagoria of the hypnagogic period. In both are there the abrupt transitions, the sudden lapses, the irruptions of the irrelevant and the unfamiliar, the spontaneous coming and going of chaotic and multiform processes that we can neither check nor further. Similarly there are in both states occasional moments when all processes are extraordinarily coherent and rational, moments when vexing difficulties become clarified, when uncertainties are resolved and complexities are simplified. Less frequently we find in both states increased powers of recall, so that the revivals in the hypnagogic stage of dates, addresses or lines of poetry furnish an exact parallel to that well-attested hypermnestic character of certain dreams which often bring to the dreamer practical waking consequences of a highly convenient nature.

All these matters are now commonplaces of dream psychology, to those of us at least who are fortunate enough to have well-defined hypnagogic experiences. One feature of this general concordance of which I have been speaking seems, however, not to have been noted, presumably for the reason that it is of rare occurrence. This is the revival of impressions that, while never consciously received by the individual, have yet come within the range of vision or of hearing. As far as dreams are concerned, Maury reported such cases and investigators since his time have published plenty of confirmatory evidence. Members of the S. P. R. have collected the most striking instances of this sort. But I am not aware that a hypnagogic parallel for these occurrences has as yet been noted. Nevertheless, such a parallel would lie quite within the range of expectations, particularly in view of the fact that crystal vision and shell hearing present precisely analogous phenomena. The case that I append has been given me by a student whose observations and reports are unusually accurate and reliable. Her hypnagogic state is exceptionally prolonged, lasting generally from thirty minutes to an hour. During this time there is a great variety of clear-cut and distinct visual imagery ranging from colored mosaic patterns to pictorial rehearsals of the day's experiences. The particular experience here recounted relates to the revival of impressions that had undoubtedly fallen within the range of possible vision without being consciously attended to. The account is given in the third person.

"A. had been gathering a small orchid, commonly called *Pagonia* or *Lamb's-tongue*. Ordinarily it is a beautiful shell-pink and very fragrant. Occasionally it is white, and perhaps in a hundred pink ones a single white one may be found. One day A. looked very carefully for a white one, as she wanted to show it to a friend who was also a nature-lover, but she failed to find one. That night in the hypnagogic state she saw two, very distinctly, near a small clump of alders and low laurel. The setting of marsh, moss and cranberry blossoms was complete. The day following A. went again to the place of the search and found the white *pagonias* as indicated. She then remembered that the previous day, just as she had reached that part of the marsh, one of her companions punctured her hand on a barbed wire fence and that she had gone to bind it up."

This is only one of a number of entirely similar experiences that A. has had. I have before me a second account describing how the hiding-place of a lost key was revealed in the hypnagogic vision. As simple, after all, as these matters really are, it seems worth while to put them on record, in the hope of eliciting further testimony along the same line.

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REVIEWS AND ABSTRACTS OF LITERATURE

*Studies of Feeble-Mindedness.*¹

The study of the mentally defective classes is of interest and importance to both physicians and psychologists. Unfortunately, however, psychologists have concerned themselves almost wholly with the investigation of the mental processes of normal people, and have not considered the subject of abnormal psychology. Physicians, on the other hand, are interested in abnormal psychology, but largely, and almost exclusively, in those mental processes which are of importance for diagnosis, and those

¹ Under this title there have been included the following articles on idiots, imbeciles, *enfants arriérés*, *enfants faibles d'esprit*, and on *enfants anormaux* and abnormal children when it was evident that the term 'abnormal' was used synonymously, or nearly so, with 'feeble-minded':

1. 'Les enfants anormaux à Bruxelles.' DEMOOR ET DANIEL. *Année psychologique*, 1900, VII., 296-313.

2. 'Expériences de copie: essai d'application à l'examen des enfants arriérés.' SIMON. *Ibid.*, pp. 490-518.

3. 'L'interprétation des sensations tactiles chez les enfants arriérés.' SIMON. *Ibid.*, pp. 537-558.

4. 'Eine experimentelle Studie über die Association in einem Falle von Idiotie.' A. WRESCHNER. *Allg. Zeitsch. f. Psychiatrie*, 1900, LVII., 241-339. (Complete account of association experiments. Prolix but good in giving material for comparison.)

5. 'Taste and Reaction Time of the Feeble-Minded.' A. R. T. WYLIE. *Journal of Psycho-Asthenics*, 1900, IV., 109-112.

6. 'Study of the Senses of the Feeble-Minded.' A. R. T. WYLIE. *Ibid.*, pp. 137-150.

7. 'Memory of the Feeble-Minded.' A. R. T. WYLIE. *Ibid.*, 1900, V., 16-24.

8. 'Motor Ability and Control of the Feeble-Minded.' A. R. T. WYLIE. *Ibid.*, pp. 52-58.

9. "L'illusion de poids chez les anormaux et le 'Signe de Demoor.'" E. CLAPARÈDE. *Arch. de Psychol.*, 1903, II., 22-32.

10. 'La mesure de l'attention chez les enfants faibles d'esprit (phrenastheniques).' F. CONSONI. *Ibid.*, pp. 209-252. (Good material but not sufficient work on normal children for comparison. Esthesiometric results not checked by other methods.)

11. 'Notes sur la psychologie des enfants arriérés.' T. JONCKHEERE. *Ibid.*, pp. 253-268.

12. 'Psychophysical Tests of Normal and Abnormal Children.' R. L. KELLY. *Psychol. Review*, 1903, X., 345-372. (Incomplete and evidently hasty work. Not sufficient account of methods for purposes of confirmation. Subjects not described.)

13. 'Experimental Studies in Mental Deficiency: Three cases of Imbecility (Mongolian) and six cases of Feeble-mindedness.' F. KUHLMANN. *Amer. Jour. of Psychol.*, 1904, XV., 391-446. (Excellent article. Material well digested. Good bibliography.)

14, 15. 'Ueber die Assoziationen von Imbezillen und Idioten.' K. WEHRLIN. *Jour. f. Psychol. u. Neurol.*, 1904, IV., 120-123, 129-143. (Confirmation and extension of Wreschner's work. Many cases.)

which help in making prognoses. What information we have, therefore, is meager in amount and, perhaps, as is sometimes said, superficial. Many interesting mental phenomena are noted and explained in an off-hand way, and many have not been noted, because they are thought to be of little diagnostic or prognostic importance. The conditions which have been studied only superficially and those which have not been studied are likely to throw light upon similar but elusive processes in normal people. Much valuable information could be obtained from a study not only of the defects, but also of the exaggerations and the inconsistencies in the insane and feeble-minded.

The possible difficulties of experimentation upon the insane and the mentally deficient may have kept some psychologists from attempting investigations. It may be said, however, that the difficulties have been greatly exaggerated, and such difficulties as there are may be readily surmounted. Opportunity for the careful and systematic study of patients may be obtained readily at many hospitals. Whatever former disinclination to the study of patients by 'outsiders' medical men may have had has given place to a willingness to have careful experiments made to obtain a better knowledge of the psychical conditions in the mentally abnormal. The studies which are reported in this review indicate clearly that it is considered necessary to have general observations, such as are given by Sollier,² analyzed, supplemented and verified by a careful study of cases by experimental methods.

The feeble-minded have been classified according to many different criteria—speech, moral and intellectual capacity and dullness, extent of mental faculties and attention—and the names designating the conditions have widely differed. Dagonet makes four classes: (1) Simple-minded, (2) imbecility, (3) idiocy, (4) automatism. Voisin has used the term 'mental debility' in about the same sense as Dagonet's 'simple-minded.' Sollier, who bases his classification upon the process of attention, divides the feeble-minded into three classes only: "(1) Absolute idiocy, a complete absence and impossibility of attention; (2) simple idiocy, a feebleness and difficulty of attention; (3) imbecility, instability of attention."³ In all classes Sollier says there is not only a diminution in quantity, but also a modification in quality of the mental faculties. Moreover, it may be added, all idiots present cerebral lesions and are thus further differentiated from normal people and imbeciles.

1. *Sensation*.—Several authors have cited the disturbances and aberrations of sensation as the cause of the lack of mental ability in some of the feeble-minded. It is undoubtedly true, as has been pointed out, that the absence or alteration of sense organs prevents the associational processes ordinarily concerned with these spheres, and to that extent there is a defect of the mental life. Blindness or deafness or the lack of other senses, or a combination of two or more defects in one person, does not necessarily produce an incapacity for the associations in other sensory motor paths. Sensory defects may contribute to, but they are probably

² *Psychologie de l'idiot et de l'imbecile*, 2d edit., Paris, 1901.

³ *Op. cit.*, p. 17.

not the greatest and certainly not the only factors in, the production of mental weakness.

Most idiots, Schleich found, are hypermetropic, while in normal children there is a tendency to myopia. Wylie (6)⁴ found in the children examined by him a visual dullness six to eight times the normal, and Kelly (12) in the pupils of the Physiological School (who are not described, but who are probably imbeciles), found poor vision. One half were below the standard of keenness, and there was astigmatism in all but one or two. On the other hand, Sollier makes the general statement that 'in imbeciles hearing as well as sight presents nothing abnormal.' Schleich has defined the abnormality in the feeble-minded, but from the articles by Wylie and by Kelly it is impossible to tell what the differences are.

Owing to the incomplete color vocabulary of many idiots and imbeciles it is difficult to make determinations of the color sense. Jonckheere (11) and Kelly (12) agree that often color vision is defective. Kelly reports six out of twelve children with some kind of color blindness and one with total color blindness. Only two of Kelly's cases had an accurate color vocabulary, and the same deficiency has been noted by Jonckheere. Furthermore, Jonckheere states that in these cases it is very difficult to develop the sense (terminology).

Only two cases in the Physiological School were found to have normal hearing (12), but in other places nothing abnormal has been found (6 and Sollier, see above).

Taste and smell are very often dulled or perverted in the feeble-minded. The general statement is made that simple idiots are voracious and gluttonous, and that imbeciles are nearly all gourmands. Idiots will carry to their mouths anything which comes to hand—just as very many normal children do—but, in addition, some will eat salt as if it were sugar. Stones, earth, sticks, bugs and even excrement are swallowed by those in whom taste is lacking or perverted. Of 66 children examined by solutions of quinine, acid and salt, 23 could not tell any difference, 16 responded to the bitter, 40 to acid and 22 to salt. Twenty of the brightest children averaged for threshold—sugar, 1.3 per cent. solution; salt 0.48 per cent.; acid, 0.41 per cent.; quinine, 0.0177 per cent. (5).

The pain threshold is higher than in normal children (6 and 12), temperature threshold higher (12), touch dulled (6) and the double point threshold of touch increased (3 and 12), while the muscle sense is unusually bad (6 and 11). Wylie (6) found a dullness of the muscle sense varying according to the general mental ability, and because of its importance in the education of the feeble-minded efforts are now being made towards a thorough training in this field.

Demoor (1) has found and Claparède (9) has confirmed a reversal of an ordinary weight illusion in cases of idiotism. When two masses of unequal size, but of equal weights, are lifted, the smaller is judged the heavier. This illusion is found in children from the age of six or seven and is constant throughout life in normal people, but in lower grades of

⁴ These numbers refer to the numbers of the articles quoted in note 1.

idiotism a reverse judgment is given constantly in some cases, and in others the illusion is absent. The reverse illusion—called the ‘sign of Demoor’—is found in those cases which are incapable of education, and it has been suggested as a means of diagnosis of idiotism in its worst form. Claparède concludes from his study that “the presence of the weight illusion does not mean that the feeble-minded are of a teachable type, but the ‘sign of Demoor,’ when present, speaks strongly in favor of idiotism.”

2. *Motor Ability and Fatigue.*—Motor training is the kind of education to which most of the feeble-minded readily respond, and upon which depends much of their other teaching. If the movements are rapid and accurate and under fair degree of control much may be hoped for in any attempt to improve their condition. Considerable attention has been devoted, therefore, to the study of motor ability, particularly in relation to school work in the hospitals.

Strength and steadiness (8), accuracy and rapidity of movement (12 and 13) are all less than in normal children, and the threshold of movement is larger (12). Experiments similar to those made by Fullerton and Cattell⁹ on the accuracy of perception of the extent of movement in 34 children of the Minnesota School showed no appreciable deviation from the normal (although the author concludes that there is an error of 2 to 10 times the normal) (7).⁸ All the experimenters found a very

	Wylie	F. and C.
100 mm.	+ 8	+ 11.8
300 mm.	— 1	+ 2.8
500 mm.	— 17	+ 4.3
700 mm.		— 4.8

It must be remembered that W.’s results are obtained from children, and that perhaps the 500 mm. experiments would give effects similar to those found by F. and C. for 700 mm.

slow rate of tapping and arm movement (8, 12 and 13). Kuhlmann (13) obtained results of practice in accuracy,—throwing at a target,—but the curve is not regular, and showed a decrease in ability so that occasionally it dropped to a point below which it had started. This is undoubtedly due, as the author points out, to decreasing interest; but when the interest is again aroused, as was done, the curve rises again.

The experiments on tapping—most rapid and continued movements—were examined for evidence of fatigue. Many of the subjects tapped at a very slow but continued speed throughout the experiments, and it was difficult, sometimes impossible, to make them tap at a faster rate. The average maximum rate is very slightly above the normal rate. Some tapped faster at first and gradually decreased in rapidity, but neither Wylie (7) nor Kuhlmann (13) believes the decrease to be due to fatigue. Kelly attributes the result to a rapid fatigue, but disregards certain results. Of the children examined by him three showed an increase in

⁸ ‘Perception of Small Differences.’

⁹ The errors from Wylie’s series and those obtained by Fullerton and Cattell (p. 48) are as follows.

tapping with the finger from the first to the last parts of the experiment, and four showed corresponding increases in rapidity with arm movements (12). The results would not lead one to believe that 'fatigue with backward children, as would be expected from their low vitality, is very rapid and considerable' (Kelly, 12), but rather that 'the lowering of interest and attention does not permit deduction regarding fatigue (Kuhlmann, 13).

3. *Attention*.—Most authorities agree that the lack of attention is the most common defect in the feeble-minded and the greatest hindrance to their education. If the attention can be sufficiently aroused and trained it is probable that other deficiencies will give place to a more normal condition. Since this matter is considered of such importance we should expect much time given it in the experimental determination of the condition in imbeciles and idiots, but, unfortunately, few of the experimental studies consider the subject.

The results of the experiments upon motor ability and fatigue reported above give some indication of the extent of the attention. Kuhlmann (13) compared the maximal and the normal rate of tapping, and found an average increase of only $1\frac{1}{2}$ taps per second when the attention was directed to make movements as rapidly as possible. (One subject showed a decrease in rate, and another gave practically the same results in both sets of experiments.) The maximum rate is much slower than in normal children. When the subjects were told to tap in time with the beat of a metronome, the accuracy was much greater during the first half minute than at any later time. It seems evident, therefore, that the attention was kept up for about 30 seconds. The esthesiometric tests of Consoni (10) show, in a uniformity of the double-point threshold, a considerable degree of attention to stimuli of one kind, but when distracting influences were brought in—lights, counting blows on the other hand, counting the beats of a metronome, odors, tasting solutions, etc.—the threshold was much greater and much more varied than in normal children. The alterations in attention were found more prominent in the phrenasthenics of the most marked type. Consoni appears to agree with Sollier¹ in his conclusion: the degree of general capacity of attention is in direct relation to the power of inhibition, and the examination of the attention furnishes a precise means for the estimation of the degree of mental weakness.

4. *Reaction Times*.—Twenty-two children gave an average of .388 sec. (M. V., .08) for touch reaction, 21 experiments each; and sixteen children, for sound, averaged .293 sec. (M. V., .085), 24 experiments each. Eight Mongolian type averaged .396 sec. for touch (M. V., .095), and .360 sec. for sound (M. V., .113) (5). The individual averages and variations are not recorded, and it is impossible to tell how much variation there is in the group, and how large the individual variation is. Wylie concludes, however, from the experiments that 'long reaction times and high mean variations seem to be characteristic' of the feeble-minded.

In his experiments on association Wehrlin noted the time for giving the

¹ *Op. cit.*

associations in one high-grade idiot and four imbeciles. One subject was found to give reactions as rapidly as normal people, but the other four were very slow. The average time in seconds for the associations to concrete words was found to be 3.4 sec., normal subjects 1.8 sec.; to abstract words, 3.7 and 1.9 sec., respectively; to adjectives, 3.5 sec. and 1.9 sec.; and to verbs, 3.3 sec. and 2.2 sec. (14 and 15). Wreschner has in one subject the times of about 1,000 association reactions, but these have not been calculated in a manner that makes them available (4). The average time in his experiments is about 3 seconds. The naming of ten object pictures, the distributing cards of different kinds, etc., were used to determine the time for discrimination, association and movement in the subjects examined by Kuhlmann (13). For naming a picture and distributing a picture card Kuhlmann found an average time of 1.48 and 1.46 sec., respectively. For distributing colored cards, 1.67 sec., and for form cards 1.93 sec. The general average for the discrimination, association and movement for one card is 1.64 sec. In addition, the author made separate tests of discrimination time with dominoes, in which experiments the time was very long. No direct comparison is given for normal children.

5. *Association and Memory*.—As was to be expected, the associations of idiots and imbeciles are simple and not very varied. Wreschner (4) used as stimulus words, (a) adjectives descriptive of light and color, form and direction, movement, touch, temperature, hearing, smell, taste, pain and general sensations, and esthetic feelings; (b) nouns—parts of the body, objects in a room, in a house, in a city, in the earth, botanical words, names of animals, members of a family, and occupations; (c) abstract words—with cheerful and sorrowful idea content, descriptions of feelings, will, understanding and consciousness, legal conditions and interjections. These words were used as stimuli ten times each. The associated words which were given are noted in detail and the time in seconds for each association. These are grouped, classified and analyzed in detail. One is struck with the persistence of certain associations throughout the series of ten, and with the fact that there are so many purely sound associations. He finds that the relative number of sound associations for adjectives is 1:3.8; for concrete words, 1:0.7, and for abstract words, 1:0.4. The content associations take a longer time than the sound association, and this is particularly noticeable if the sound and content associations for the same stimulus words are considered. Only one case was tested by Wreschner, viz., an idiot. Wehrlin experimented on 13 idiots and imbeciles—average age, 40—with 58 to 290 experiments each. The simple character of the 'associations' is evidenced by the following list of kinds of associations which were given (14 and 15).

1. Tendency to definition: *e. g.*, 'year'—'12 months.'
2. Tautology: *e. g.*, 'run'—'a man runs'; 'hair'—'beautiful hair.'
3. Generalization: *e. g.*, 'bread'—'eatable.'
4. Time, origin, use, etc., characterization: *e. g.*, 'book'—'for reading.'
5. General functions: *e. g.*, 'wood'—'it burns'; 'bird'—'it flies.'
6. Examples and reminiscences: *e. g.*, 'sick'—'I was sick'; 'father'—'he threw me down stairs once.'

Probably in no other single aspect of mental activity of the feeble-minded are there so varied differences as in memory. Many are unable to remember the simplest words, while others have remarkable memories for special things, *e. g.*, calculation, playing musical instruments, etc. Jonckheere (11) reports two cases of remarkable memory. An imbecile boy examined by him could recognize and name in French or German the disks for a music box with which he played, although he could not read. In this case there was a memory of the arrangement of holes in the disk, or probably of the design of the inscription. Another feeble-minded boy, who entered the school at the age of 9½ with only a German vocabulary, learned in 3½ years French and the Flemish patois and can recite in Dutch. Many of the children of the Vauluse School have been found to compare favorably with normal children in their memory for numbers and words (copying 50 figures and two sentences); but idiots and imbeciles do poorly in all three tests (2).

Four numerals can be immediately repeated by many feeble-minded, and some can give five or six (12). Wylie tested the visual memory by having children pick out 5 cards (containing colors, letters or forms) previously shown to them, from a number, with the following average results: form, 2.4 cards recognized; color, 2.4; letters, 2.6 (7). Similar results were obtained by Kuhlmann (13). The auditory memory was tested by repetition of six associated words, repetition of groups of sentences, and selection of five nonsense syllables, with the following results: average number of words given correctly, 3.8; words in sentences, 11; nonsense syllables, 2.1.

6. *Miscellaneous Observations.*—All authors agree that the notions of time and space are very difficult to teach the feeble-minded (Sollier, Demoor and Daniel, and Jonckheere). Time is much more difficult than space, and past time much harder than future (11).

Like other mentally underdeveloped people, bright colors are most often preferred. Music with its rhythm has a wonderfully dynamogenic effect, and in some schools it is being used, with excellent results, in classes for gymnastics and motor training.

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Psychical Selection. (Empiriomonism in the Study of Psychics.) A. BOGDANOFF. *Questions of Philosophy and Psychology* (Russian Vorprossy Phil. y Psychol.), May-June and September-October, 1904, pp. 335-379 and 485-519.

The author seeks to ascertain 'the direction of psychology, if *unity of experience* were *in principle* made its underlying basis.' His conception of empiriomonism he sums up in the following theses:

1. Dualism of experience is inadmissible as a principle. Despite their diversity, the elements of experience are in both spheres, the 'physical' and the 'psychical,' *the same—in themselves neither physical nor psychical*; *i. e.*, they are outside the pale of these determinations (the thesis of empiriocriticism).

2. The 'physical' and the 'psychical' represent two ways of grouping the elements of experience: the psychical being experience organized *individually*; the physical, experience organized *socially* (the first thesis of empiriomonism).

3. Every *objective* (physiological) vital process has a parallel *subjective* one. This parallelism must be interpreted in the sense that the physiological life-process is the reflection of the subjective complex in the socially organized experience of living beings (second thesis of empiriomonism).

4. The progressive development of cognition leads to a harmoniously integrated, monistic organization of experience, whose immediate expression is *the organic unity of epistemological methods*. This unity we attain by subordinating the 'subjective' in experience to the 'objective,' by applying to the individually organized experience means elaborated in the sphere of the socially organized experience. In our time this tendency is manifested in the *idea of universality* attributed to the law of the conservation of energy (the thesis of energies).

Thus the author's problem is one of method, viz., the application of *psycho-energetics* in psychology. Now, the concept energy implies *commensurability* and universal *equivalence* of phenomena. As to the former, psychical phenomena are *magnitudes*—'intensive,' inasmuch as they exhibit more or less 'force'; 'extensive,' inasmuch as they are capable of associating with one another, thus making up the greater or smaller fullness of conscious life. Of course, they are not *exact* quantities of energy; but is not 'exactness' a relative term also in the other natural sciences? As to the requisite of equivalence, empiriomonism, by its second thesis, rises above it. Indeed, the psychical phenomenon and its concomitant physiological process can no more be regarded as two than the body, visually perceived, can be segregated from the same body, tactually perceived.

THE SCHEMA OF PSYCHICAL SELECTION.—From this view-point the individual experiences (*Erlebnisse*) are, with reference to the psychical system as a whole, either positive or negative; *i. e.*, they either increase or decrease the sum total of its energy. This formula embraces alike the data of biomechanics and of psychology. Psychically, the fluctuations of vitality are expressed in pleasure and pain, *i. e.*, in the so-called positive or negative 'affectual.' Indeed, all psychical life moves between these two poles of the affectual; and the almost tautological statement that 'pleasurable is whatever is sought after and painful whatever is avoided' may be said not only to underlie all applied psychology, but to express the whole process of 'psychical selection.'

The relation of this process to consciousness appears from defining the latter as 'the *province of coordinated psychic variations*,' for, the nature of psychic variations being determined by the sign of the affectual, it follows that the *whole field of consciousness is at once the field of psychical selection*. Thus, the process of psychical selection naturally rises to the rank of a *universal principle* in the investigation of life as the stream of inner *Erlebnisse*.

THE SCHEMA OF ASSOCIATION.—The elements of psychical experience

are connected by association, those of the physical world by the higher type of objective uniformity. The principle of psychical selection is now called upon to 'explain' this psychical connection as follows:

1. Association by contiguity takes place when A and B together occur in consciousness. But then they both are controlled by psychical selection, and form, therefore, *one system of energetic equilibrium*, whose relative fixity is determined by the *intensity of the affectional* (a fact underlying pedagogical methods).

2. The higher type of association, that by similarity, is grounded in mental *habituation*; the latter, again, is governed by psychical selection, thus: (a) the habitual complex recurs more easily; (b) its fixity is ever increasing. For, like the energetic process, psychical selection tends toward stable equilibrium, at the same time forming more extensive systems, with a resultant *average* affectional naturally small, but positive; and this accounts for the fact that (c) the affectional of the habitual complex inclines toward indifference, excepting cases with a negative affectional, where it passes into a positive one; for, in the sum total, psychical selection is positive. Instance the student of chemistry getting habituated to the smell of H_2S so as to find it in the end even agreeable.

From the foregoing the author infers *en passant* that the principle of psychical selection is broader than what he would call 'psychological Lamarckism,' *i. e.*, 'habituation' and 'exercise' (which play so important a part for Avenarius).

Now, the process of 'generalization' and 'discrimination,' this basis of knowledge, is possible only because the complex A occurs contiguously in more than one connection. In this repeated occurrence, whatever is common to the complexes is more acted upon by psychical selection than the 'individual' traits; the common becomes more conservative and its affectional more reduced, *i. e.*, a 'generalization' is realized. This process of generalization is at the same time an *association by similarity*. If A as the most-repeated combination has been abstracted from the less repeated B, C, etc., A is none the less associated with each one of them, and occurring, say, in A and B, 'tends' to call forth also its other combinations; one bird 'reminds' one of another bird.

The 'coldness' of knowledge, the relative indifference of the affectional in 'generalizations' and 'concepts,' is at once explained. Moreover, this 'coldness' underlies the logical 'law of identity': a high affectional indicates intense psychical selection, setting mental complexes in commotion, *i. e.*, changing their 'identity.'

3. Finally, the highest type of association, that by contrast or dissimilarity (or discrimination), is grounded in the 'rivalry' of mental complexes.

Psychical life exhibits two inseparably connected types: the image-complex (passive) and the will-complex (active attitude). The latter, as such, is *energetically negative* (= loss of energy¹); hence, whenever it dominates the direction of psychical selection is negative, and persists until harmony between the two complexes is established.

¹ This justifies the identification by some philosophers of impulse, will with sufferance.

And now the association in question. The sight of a black man provokes the image of a white man, but not of white paper; obviously, dissimilarity presupposes similarity. Let us then pursue a concrete illustration. The white are at war with the black. A white soldier, strayed off, seeks his way to safety; at a distance he perceives a silhouette; but is it of a white or a black man? Here ensues a rivalry of two images associated with opposite *impulses* (will-complexes), a 'wavering' attended with a negative affectional, a 'disagreeable' situation.

Upon analyzing the two images you find that they, having in common A (=human features), are already associated by similarity. But the one has yet the element B (white) and the other, C (black), and A and B has a will-complex different from that of A and C. Furthermore, in the course of the rivalry each will-complex accentuates the dissimilar elements to the neglect of A; and this is the fundamental trait of 'association by dissimilarity,' or of the 'form of discrimination.' It takes place when the images associated by similarity are at rivalry owing to the dissimilarity of their respective will-complexes. Indeed the image is always connected with some *will-complex*, 'scholastic amusement in hair-splitting' not excepted, for the 'word' is predominantly a *will-reaction*, so that, inasmuch as similar images are signified by dissimilar words, they are *eo ipso* associated with different will-acts.

All these considerations lead the author to regard 'psychology as the science of psychical (or associative) forms of experience that are *determined* by its variable contents.'

In his second article the author proceeds to show the practical applications of the principle of psychical selection.

The components of a psychical system are: (1) the *Erlebnisse* forming the raw material, distinguished as to quantity, quality (heterogeneous or homogeneous), or intensity; (2) the direction of psychical selection, positive or negative; and (3) the intensity of the affectional. An abundant material, heterogeneous and intense, with a perfectly balanced affectional is the ideal norm, the limiting abstraction toward which psychical development is progressing; while the variation of these moments, severally or jointly, determines psychic types.

The work of selection is only positive, for even negative selection, like the hammer that destroys only the unstable and frail, tends to remove whatever is vitally unimportant or detrimental to the system (*i. e.*, the negative while removing a negative becomes positive). In this crucible the psychical development receives its twofold coloring: it is 'realistic' (corresponding to the environmental combinations most repeatedly posited) and 'monistic' (predominance of harmoniously unified complexes). Furthermore, the positive selection proper, keeping consciousness wide awake, feeds the *creative activity of imagination*, and develops the will-power hardened by the negative process. Socially regarded, the ideal type would tend to reconcile, to harmonize, all the contradictions of his epoch, would be the *encyclopedic genius of his time* (a Faust).

Now vary the components. (*a*) Let the negative selection, *ceteris paribus*, be much below the positive; the result is a variety characterized

by the predominance of 'fancy' over realism, of eclecticism over monism, and by unstable will-power. Heine (himself typifying this variety) styles it the Hellenic type. This 'Hellenism' is in our time represented mostly by the 'artistic nature.'

(b) The negative selection is much above the positive. Here 'reality' (repeatedly posited environment) is colored intensely gloomy; the negative process, not powerful enough to eliminate it, derives with the help of the positive selection combinations from this reality which are themselves not real (such as ideal images of happiness). The resultant variety is characterized by 'utopism' instead of realism, but with a pronounced monistic tendency manifested in consistency between thinking and acting, and by an invincible will-power in the struggle for existence. This is the 'Hebrew' type portrayed by Heine. These two types are only distinguishable historically.

(c) A quantity of psychic material much below the maximum distinguishes the characters of every-day life, who, though analogous to the former, occupy a lower plane. If favored by circumstances they may become the 'heroes' of the 'crowd.' A Washington, also a Gladstone or a Lincoln, belong to this type.

Ordinarily, Heine's Hellenic and Hebrew types lose respectively in beauty and earnestness in proportion as the quantity of psychical material falls below the maximum. Instance the degenerate parasitic classes of a community, on the one hand, and the type produced by the Catholic convent, on the other.

Again, according as the positive or negative selection prevails there obtain Heine's *Philister*; in the one case caricaturing the Hellen, in the other the Hebrew.

Finally, on this narrow basis of scant psychical material there grows up the type of the 'specialist.' From the ordinary Philistine he differs only in part, notably as far as his specialty goes; beyond this there reigns a miserable incoherence and flat eclecticism of psychical masses. However, a highly intensified selection renders the development of this type monistic, though in a peculiar manner, viz., the specialist (of this higher type) views everything through the medium of his specialty. The merchant regards all human life from the view-point of exchange. J. Bentham, that child of the newly-born English capitalism, has based his whole philosophy upon the special ideal of the most profitable bargain with reality.

In conclusion the author illustrates the foregoing by analyzing a concrete case, Shakspear's Hamlet.

Hamlet belongs to the Hellenic type. His psychic system represents a dual organization: Hamlet the warrior by descent (instance his dexterity in fencing), and Hamlet the artist. Theoretically these two personalities coexisted; but when Hamlet is called upon to act we find him wavering, irresolute; the Hellenic lack of integrity, for which the predominance of positive selection (happiness) is responsible, comes to light. But then the work of negative selection, the harmonizing force of suffering, sets in, pushing Hamlet toward the 'ideal' type. He becomes an-

other man; his thirst for harmony passes into an active *will to create* harmony by punishing crime and restoring righteousness. Hamlet succumbs, but as conqueror: he leaves his place to Fortinbras, a man of known integrity. Thus, the essence of the tragedy is: the Hellenic soul through painful struggle and profound suffering (*i. e.*, through negative selection) attains to a higher form of integrity and perfection.

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ISELIN, N. J.

The Limits of Genetic and of Comparative Psychology. MARY WHITON

CALKINS. *British Journal of Psychology*, January, 1905. Pp. 261-285.

This paper begins by distinguishing genetic from comparative psychology. Genetic psychology may or may not use the comparative method. Its distinctive feature is not its method, but that it treats its object as developing. This object is the conscious self. And development, as used here, is defined as 'the succession of more complex upon simpler states, or, conversely, of simpler upon more complex states of a unitary being.' 'Development, in the technical sense of evolutionary biology, can not possibly be predicated of conscious selves,' and heredity and natural selection have no possible application in such psychical development.

Turning to comparative psychology, the author discusses the 'continuity theory,' which holds consciousness to be a property of life, and the 'mechanistic theory,' which denies that organisms whose actions are unvaried reflexes are conscious. It is shown that neither has proved more than a possibility. 'Both agree in recognizing consciousness where there are adapted reactions.' Using this criterion, it will perhaps be found that all forms are conscious, and the field of comparative psychology 'is, after all, as wide as animal life.'

If we consider the nature of the consciousness of the different forms, the problem becomes more limited. "The minimal consciousness which an animal can be proved to have is the consciousness which accompanies the trial and error type of learning. . . . As parallel of the preliminary, random performances, there is no need to assume any save a sensational (and primitively affective) consciousness of the animal's environment and its own movements." The acquired reactions imply imagination, the animal reacts with purpose. Further, animals react only to concrete situations without analyzing them, they lack relational consciousness. And lastly, an animal, to be conscious at all, must be conscious of itself. But this does not mean that animals have attained such self-consciousness as reflective imitation involves.

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JOURNALS AND NEW BOOKS

REVUE PHILOSOPHIQUE. March, 1905. *La régularité universelle du devenir et les lois de la nature* (pp. 225-251): W. M. KOZŁOWSKI. — Uniformity of nature underlies induction. Regularity is a projection of

our thought. Experience accords with laws because we explain exceptions by new laws. Scientific laws are hypothetical judgments. *La Paix et la Guerre* (pp. 252-270): CH. RICHET. Humanity has progressed not by war but by peace. War may be natural, but society is meant to overcome natural evils. Arbitration will soon become universal. Pacific education is the only method. *Amitié et Socialité* (pp. 271-282): G. PALANTE. Friendship is in sharp contrast with sociality or altruism. The latter is based on convention, frowns on spontaneity, fears isolation, disapproval of the crowd. The former is exclusive, aristocratic, egoistic, encourages freedom and progress. *Revue Critique: La Beauté rationnelle* (pp. 283-294): FR. PAULHAN. Review and criticism of P. Souriau, *La Beauté rationnelle*. *Analyses et Comptes Rendus*: P. Martinetti, *Introduzione alla Metafisica*: J. SEGOND. *L'Année psychologique*: B. BOURDON. R. S. Woodworth, *Le Mouvement*: J. PHILIPPE. H. Thompson, *Psychological Norms in Men and Women*. J. Whatson, *Animal Education*. J. F. Messenger, *The Perception of Number*. J. W. Jones, *Sociality and Sympathy*. *Études sur la philosophie morale au XIX^e siècle*: J. DELVAILLE. W. H. Johnson, *The Free-will Problem in Modern Thought*: J. SEGOND. R. Richter, *Der Skepticismus in der Philosophie*: C. BOS. C. de Vaux, *Avicenne*: F. PICAUVET. R. Richter, *Friedrich Nietzsche*: G. PALANTE. J. K. Hollitscher, *Friedrich Nietzsche*: G. PALANTE. F. Rittelmeyer, *F. Nietzsche und das Erkenntnisproblem*: G. PALANTE. A. Drews, *Nietzsches Philosophie*: G. PALANTE. O. Ewald, *Nietzsches Lehre in ihren Grundbegriffen*: G. PALANTE. R. Oehler, *F. Nietzsche und die Vorsokratiker*: G. PALANTE. *Revue des Périodiques Etrangers*. Livres déposés.

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NOTES AND NEWS

THE Arnold Gerstenberg studentship at the University of Cambridge, of the annual value of nearly £90, tenable for two years, open to men and women who have obtained honors in Part I. or Part II. of the Natural Sciences Tripos and whose first term of residence was not earlier than the Michaelmas term of 1900, will be offered for competition in the Michaelmas term, 1906. It will be awarded by means of essays. The subjects for essays are: (1) a philosophical discussion of the doctrine of energy and particularly of the new theory of energetics; (2) a critical examination of Descartes's philosophy of nature; (3) the relation of mathematics and the theory of probability to physics; (4) the theory of psychophysical parallelism; (5) the scope and methods of comparative psychology; (6) the philosophical import of post-Darwinian theories of natural selection. Candidates must send on or before October 1, 1906, an essay on one of the above subjects to Dr. James Ward, Trinity College, and declare their intention, if successful, of pursuing a course of philosophical study.

At the meeting of the Western Philosophical Association, held in Lincoln, Neb., on April 21 and 22, the following officers were elected for the ensuing year: President, Professor James H. Tufts; Vice-President, Professor F. C. French; Secretary and Treasurer, Professor A. O. Lovejoy; members of the Executive Committee, Professors W. B. Pillsbury and A. Ross Hill. The following were elected to membership: Professor Charles W. Fordyce, Dr. L. C. Monin, Professor J. B. Stoops, Dr. Frank P. Graves, Mr. H. C. Campbell and Dr. J. C. Merriam. A report of the meeting, with abstracts of the papers and discussions, will appear in an early issue of the JOURNAL.

PROFESSOR JAMES R. ANGELL's 'Psychology,' published in this country by Henry Holt and Company, has been republished in England by Constable and Company. A second edition of the work, in which a number of revisions have been made, has been issued.

DR. R. B. PERRY has been advanced to an assistant professorship of philosophy at Harvard University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE RELATIONAL THEORY OF CONSCIOUSNESS AND ITS REALISTIC IMPLICATIONS

ONE needs not to be a disciple either of Hegel or of Comte to recognize that there has been, in the methodology of the special sciences and in that of science as a whole, a certain historical procession or evolution of concepts, which has proceeded somewhat along the lines described by Ludwig Stein in an article printed in the *Archiv für Systematische Philosophie*, August, 1903, entitled 'Der Neo-Idealismus unserer Tage.'

In our first efforts to understand a thing we are apt to seize upon its most interesting and important characteristic, and attempt to explain its behavior in terms of that. The property thus singled out is felt to be the essence or substance of the thing, the other properties are thought of as accidents or attributes which are in some way supported by it. This is the first stage in the development of methodological concepts, the stage of definition, working by the category of *Substance*.

Sooner or later we realize the inadequacy of this attitude. The property which seemed from one point of view to be essential is from other points of view found to be less important, less worthy to constitute the true nature of the thing than the group of properties which were regarded as mere accidents. This discovery leads us to treat the object as a complex of qualities, none of them worthy to be called substance, but each worthy of investigation as a phenomenon. This is the second stage of methodological development, the stage of empirical description and analysis, working by the category of *Quality* or *State*.

But, as before we found that the substance or essence of a thing depended upon its attributes, so now we find that the attributes do not themselves determine the times and places of their occurrence, but depend in their turn upon the relations between other objects. We thus attain the third and final stage of scientific method, the stages of prediction and explanation, in which each object of study is viewed under the category of *Relation*. This method of *correlat-*

ing every phenomenon with a conditioning relation subsisting between other phenomena enables us to pass from one part of reality to another, and to bring together all discrete objects in the substitutional continuum of knowledge. The current view of the physical world as a mechanism or nexus of spatio-temporal relations, of which all the qualities, whether essential or accidental, between which the relations subsist are viewed as symbols of one another, is the general outcome and the most striking illustration of our third stage of methodological evolution. But, in the progress of special branches of physical science, the final triumph of the relational method is equally obvious. Light and heat, for example, which were first viewed as occult substances, and later analyzed and described in terms of their various manifestations, are now finally correlated with the relations of motion which accompany them, and which determine the time, place and degree of their occurrence. In the same way, the movement of the planets at first ascribed to quasi-personal essences by the scholastics, and, second, described and analyzed by Keppler, was, thirdly, scientifically or predictively explained in relational terms by Newton. It is of course true that some of the sciences have been unable fully to realize the relational ideal. In biology, for example, while we no longer regard life as an occult substance or force, we are still in large measure limited to the analysis and classification of its phenomena; we are as yet unable adequately to explain life, *i. e.*, to express it as a relation or function of other things. But the ideal of the biologist is, I take it, the same as the ideal of other scientists. And he would be glad to correlate vital phenomena with some particular type of spatio-temporal relation for the same reason that the physicist is glad to correlate a color or a tone with a definite rate of oscillation.

So far we have been considering the methodology of the physical sciences, the study of the objects of consciousness. We have seen that in that field of study the category of substance has given rise to the category of quality, which has in its turn made way for the category of relation. When we turn to the psychological study of consciousness itself, as the phenomenon of *awareness*, we might expect perhaps to find a similar methodological development. To a very limited extent such an expectation would be fulfilled. Descartes, Spinoza and Leibniz do in a measure represent in their several conceptions of consciousness the three stages and categories which we have been considering. For Descartes consciousness is a substance, for Spinoza it is a series or complex of qualities corresponding point to point with the physical series, while for Leibniz consciousness is a relation. In a remarkable passage in the *Monadology*, Leibniz ex-

plains the conscious or apperceptive state of a monad as consisting in the organization in the monad of its *petits perceptions* with regard to some one of them as a center. As the world organized with reference to some one of its points is a monad or substance, so the monad organized with reference to one of its qualities is consciousness. Thus mind and world, consciousness and unconsciousness, are not, as with Descartes, different substances, nor, as with Spinoza, different attributes or qualities. They are of the same substance and the same qualities, their difference is entirely a difference of relation. It is a matter of regret that the relational theory of consciousness thus clearly formulated by Leibniz should have been so bound up with his peculiar metaphysical views that it failed to gain any notable recognition or development at the hands of his successors. And what applies to Leibniz in this matter applies equally to Herbart. For Herbart, too, developed a relational view of consciousness, which, like the Leibnizian view, failed to gain general acceptance by reason of the metaphysical doctrines with which it was entangled. In fact, modern conceptions of consciousness have been dominated almost entirely by the more primitive attitudes of Descartes and Spinoza. In both England and Germany consciousness has been treated as a substance in which the apparently independent objects of the experienced world inhered as dependent states or 'ideas,' which is the attitude of Locke and Berkeley no less than of Kant and Fichte. Or else, after the manner of Spinoza, consciousness has been conceived as a series of purely secondary qualities, running parallel to the stream of purely primary qualities supposed to constitute the material world. For the first or Cartesian view interaction is at once a necessity and an impossibility, while in the second or Spinozistic conception all the artificialities of parallelism are inevitably implied. In short, we do not find in the history of the science of consciousness that abandonment of the categories of substance and state and that definite adoption of the category of relation which are so manifest in the history of the objective sciences. And if it be admitted that progress in physical science has been nearly proportional to the degree to which the relational or mechanical ideal has been accepted, we might infer that the relatively backward state of psychology is due, not so much to the intrinsic difficulties of its subject-matter, as to its persistent use of methodological categories which are elsewhere outworn and discredited.

In view of this general situation it is encouraging to note that within a comparatively recent time several writers have inaugurated a movement to put consciousness on a par with other objects of study,

by investigating it under the category of Relation. Mach in Germany, Bawden, James and Woodbridge in America, in relative independence of one another, and in complete independence of Leibnizian and Herbartian precedents, have formulated the difference between physical and psychical as a difference of relational context rather than as a difference of substance, or a difference of quality. We must admit, however, that gratifying as these new formulations of the relational theory of consciousness undoubtedly are, most of them suffer from the taint of that very subjective and non-relational view which they are intended to replace. Mach,¹ for example, uses the term 'sensation' to denote the primary elements which are to stand as the terms both of the physical and of the psychical order of relation, thus implying that both physical and psychical are ultimately modes of the psychical. With Professor Bawden's functional view of the physical and psychical,² I find the same difficulty; for that view, if I understand it, would also make consciousness the ultimate reality within which the physical and psychical orders are differentiated in response to the pragmatic needs of the conscious experience itself. In the theory of Radical Empiricism, recently promulgated by Professor James,³ there is less of subjectivism than in either of the foregoing, and yet here also the primal elements of reality are described by the psychical term 'pure experience.' Even a *pure* experience implies a consciousness of it; its *esse* depends upon *percipi*. Then again Professor James's adherence to the 'humanistic' theory of knowledge, which to many of its critics *appears* to regard axioms as postulates, and to hold that propositions owe their truth to the fact that people believe them, would seem to indicate that despite certain undeniably realistic features 'radical empiricism' is not quite free from the subjectivism of Berkeley and Hume. Professor Woodbridge's statement⁴ of the relational theory stands out in contrast to the formulations thus far considered, in that it contains a recognition that objects and truths do not depend for their existence or nature upon any consciousness of them, and that they are for that reason not to be described by any such psychical terms as sensations or mental needs or pure experiences, but rather as real and independent *objects* in space and time, which are sometimes related in the continuum of consciousness and sometimes not.

¹ 'Analysis of Sensations.'

² 'The Necessity from the Standpoint of Scientific Method of a Reconstruction of the Ideas of the Psychical and Physical.' JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 3, pp. 62-68.

³ 'Does Consciousness Exist?' *ibid.*, Vol. I., No. 18, pp. 477-491. Cf. also Dr. R. B. Perry's able article on 'Conceptions and Misconceptions of Consciousness.' *Psychi. Rev.* XI, pp. 282-296.

⁴ 'The Nature of Consciousness,' this JOURNAL, Vol. II., No. 5, pp. 119-125.

And this brings me to what I regard as the first and fundamental implication of the relational theory of consciousness, viz., realism—a complete abandonment of the Cartesian, Berkeleian and Kantian view of the conscious self as a substance in which objects must inhere in order to be real or true. All relations presuppose the existence of terms between which they subsist. If consciousness is at length to submit to the same scientific treatment that we accord to other phenomena—*i. e.*, if it is to be equated to a mode of relation between things—it must inevitably be regarded as secondary to those things. Consciousness, in short, must be thought of as inhering in its objects, rather than its objects inhering in it. In fact the new relational theory of consciousness is in every sense correlative to the old realistic theory of the objects of consciousness. If consciousness is a relation, objects of consciousness must be real independently of their standing in that relation, while conversely, if objects are real independently of a consciousness or knowledge of them, then that consciousness or knowledge can not be anything other than a relation between them.

Assuming the truth of this correlation, I shall use the terms realism and relationalism interchangeably, in the hope of making more clear the new conception of consciousness by identifying it with the more familiar realistic view. And in the remainder of my paper I wish to consider: (1) The agreement of this conception (*a*) with the instincts of common sense, and (*b*) with the facts of science; (2) the objections which have been made to the theory by idealists or non-relationists.

(1) First, then, the relational theory is admittedly in accordance with common sense, which naturally thinks of the physical world as passing in and out of our consciousness without gain or loss of existence. Consciousness of objects is supposed to depend upon the relation of the object to our eyes, ears and skin. And it is quite impossible for an unsophisticated person to imagine that objects which pass from his field of view thereby cease to exist.

Again, the scientist, and especially the physiologist, is at one with the plain man in treating consciousness as a relation. For him, the perceiving of an object depends upon the relation of the brain to the stimulus received from the object. His realism is not, to be sure, so naïve as that of unreflective common sense, for he recognizes the personal equation—the inevitable distortion of perspective which results from having to perceive things through the imperfect media of brain and nerves. But his whole science rests on the supposition that consciousness does enlighten us as to the nature of objects, not

indeed as to what they might possibly be apart from all relations, but as to what they actually are in relation to our brain.

So much by way of a brief statement of the essential agreement of the relational theory with instinctive beliefs and with the conclusions of science. We pass now to our second point—a consideration of the arguments against conceiving consciousness as a mode of connection between the organism and its environment.

The idealists from Descartes to Fichte have urged two lines of objection. They have claimed, first, that objects of immediate perception are intuitively known to be states of the knower. To this the realist replies by denying the supposed intuition. That is to say, he denies that there is anything in his consciousness of objects that can be interpreted as implying their dependence on his consciousness. *Cogito ergo sum* is to him not a whit more certain or primary than *Cogitatur ergo est*. Consciousness appears as a purely diaphanous medium which in no way supports or alters its objects. But, secondly, the more empirically minded idealists, those, for example, of the British school, are inclined to help out the first or Cartesian argument by pointing to the dependence of perceived objects upon their relation to our sense-organs. This so-called physiological argument, which would infer a dependence of objects upon a non-physical mind by appealing to the fact that they are always perceived in relation to a physical body, is an obvious *non sequitur*. So far as I can see, all of the arguments for idealism are simply elaborations of one or the other of these two lines of appeal.

There is, however, one consideration or assumption which, though hardly to be classed as an idealistic argument, has nevertheless lent some color of validity to the paralogism just mentioned. I refer to the doctrine accepted by the majority of physcists of the subjective nature of the 'secondary qualities.' As things stand at present, the idealist can always say to his opponent: "You grant that colors, sounds and odors have no objective existence; why should you not be consistent, and grant also that the space, time and mass relations (which are inconceivable apart from these or some similarly specific qualities) are subjective also?"

Now, there are few more unjust decrees in the history of scientific legislation than the sentence of banishment from the physical world which, at the beginning of the seventeenth century, was pronounced upon the secondary qualities. As soon as the modern investigator discovered that scholastic science was fundamentally wrong in that it failed to perceive that the secondary quality or specific nature of a phenomenon was, as such, of no use in determining the time, place and intensity of its occurrence, he jumped to the conclusion that all genuine qualities were subjective.

The prime error of the scholastic philosophy of nature did not consist in 'filling space with substantial forms,' or, as we should now say, in recognizing that with every quantity, or extensive mode of energy, there is correlated a quality, or intensive mode of energy,—what the panpsychist would call a sensation. The scholastic error did not, I say, consist in the objectivization of qualities, for, panpsychism aside, we do not hesitate at the present day to fill the brain with substantial forms or, in the modern phrasing, to correlate psychical with neural processes; and if the complex phenomena of our conscious experience can be correlated with protoplasmic changes, there is no reason to suppose that simple, though equally specific, qualities are not correlated with changes in inorganic matter.⁵ The real error of the scholastics lay, as we have already said, in the belief that these substantial forms or objective qualities were causally effective, and that they determined by their specific natures the times and places of their occurrence. The only way to *predict* the where and when of a thing is to find its relations to the where and when of other things. That is the mechanical theory. But, because the time and place of a thing can only be scientifically expressed as a function of other relations of time and place, it by no means follows that times and places are empty or void of specific natures, and that the physical world is a set of relations without terms, of primary qualities without secondary qualities.

Air waves stimulate the auditory nerve, and sound is manifested; hydrogen unites with oxygen, and water is manifested—a substance differing from its components both in primary and in secondary qualities. Yet we do not hold that water is subjective and hydrogen and oxygen objective. Why should we hold that sound is more subjective than water? Like every object, the secondary quality depends for its manifestation upon the relations of other objects. But this observable dependence of sensible objects upon physical and physiological relations does not imply an unobservable dependence upon consciousness.

I would call special attention to the status of the secondary qualities in connection with the relational theory, for the following reason: As long as the secondary qualities are accepted as objectively real there is no temptation to regard consciousness as anything *but* a relation. The physical world is a self-supporting system if it

⁵ The distinctive function of protoplasm may consist, not in creating new qualities, but in giving a new relational form to qualities that normally occur anywhere. In the *American Journal of Psychology*, for January, 1904, the present writer, in support of this statement, suggested a relational theory of consciousness in which the psychical in general is identified with the 'specious present,' which is the simplest or limiting case of memory.

possesses the concreteness of secondary qualities, and as such needs not to inhere in any mind in order to exist.* On the other hand, if the physical world is void of all specific natures, and is only a regress of spatial and temporal relations, then it is not self-supporting, but must be regarded as parallel to or inherent in consciousness. Berkeley would never have dreamed of regarding the perceived world as a subjective state if he had not inherited from Locke and Descartes the mistaken inference that, in the case of the secondary qualities, relativity to the body implied dependence on the mind. He simply extended this inference with perfect consistency to the primary qualities, while his predecessor had applied it only to the secondary qualities.

If the world of concretely perceived facts is real, consciousness must be a relation between them. The realistic theory of the world and the relational theory of consciousness are, as we have already said, implied in each other. This recognition of the identity of the two theories will be slow in coming, for the reason that the relationists, from Mach to James, have been by sympathy and training idealists of one type or another, and they are naturally loth to recognize the incompatibility of their later conclusion that consciousness is a relation subsisting among objects with their earlier belief in consciousness as a substance in which objects must subsist. And yet the day may come when Mr. Russell's recent aphorism, that a truth no more depends on the knowing of it than an apple upon the eating of it, will be regarded, not as a paradox, but as a truism. If philosophy is to achieve any such deliverance from subjectivism, I think that it will be effected by the demands on the part of psychologists for a relational view of consciousness.⁶

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*In order to bring together the various points of the paper I subjoin the following summary: Every object of study, except consciousness, has first been regarded as a substance, second, as a group of qualities, third, as a relation between other objects. The conceptions of consciousness, however, if we except the theories of Leibniz and Herbart, have generally alternated between the first and second of the methodological categories. Recently, several philosophers have independently suggested that the relational category should be applied in the study of consciousness as well as in the study of its objects, that the phenomenon of consciousness, of awareness, should be correlated with such relations between other phenomena as will best explain its function and its origin. The relational theory of consciousness, however, implies a realistic theory of sensible qualities, both primary and secondary. And, conversely, when once this realism is recognized, there is no temptation to relapse into either of the idealistic or non-relational conceptions of consciousness. This paper was written for the fourth meeting of the American Philosophical Association at Philadelphia, December, 1904.

A DEDUCTION OF THE LAW OF SYNTHESIS

THE first crucial problem of logic, upon the solution of which depends all further advance, is the determination of the law of thought whereby the form of judgment which is symbolized '*A is B*' is made possible. The traditional laws of thought—identity, contradiction and excluded middle—seem, on the face of them, to give no excuse for such a proposition; nay, they would appear rather to preclude its possibility. If '*A is A*,' and '*A is not non-A*,' and if *A* and non-*A* exhaust the universe of predication, there would seem to be no possible justification for predicating *B* of *A*. For either *B* is identical with *A*, in which case the proposition ought to be expressed in the form '*A is A*'; or *B* is not identical with *A*, in which case, being that which is not *A*, it falls into the class which, by the law of contradiction, is precluded from being made a predicate of *A*. Yet, notwithstanding the seeming impossibility of bringing the proposition '*A is B*' into conformity with the three laws, that proposition symbolizes our only fruitful mode of thought, the orthodox judgments '*A is A*' and '*A is not non-A*' being the expression of a process, if such it may be called, that in comparison is utterly barren.

The question then at once arises as to the adequacy of the traditional laws of thought. If '*A is B*' can not be justified in terms of the principles of identity, contradiction and excluded middle, must we conclude that the law which does give it legitimacy is one that is at complete variance with them—a law of synthesis, as the expression is, instead of their empty law of analysis? Or, on the contrary, may we find it possible, notwithstanding appearances, fruitfully to reduce this judgment to conformity with the traditional laws as these stand in their analytic statement? Or, finally, instead, on the one hand, of rejecting the three laws outright, or, on the other, of accepting them in their barren analytic character, may we find that, if we take note completely enough of the conditions of their expression, they are the real laws, not only of analysis, but of synthesis?

The second mode of solution has not been without its advocates. When the difficulty is pressed that *B* is not identical with *A*, and therefore can not rightly be predicated of it, these logicians would say that it is not the traditional laws that are at fault, but rather our formulation of the judgment. *B*, as sheer *B*, is, indeed, not identical with *A*; but, when we pronounce the judgment '*A is B*,' we do not mean that *A* is sheer *B*; rather do we mean that the *B* which is predicated is that *B* which belongs wholly to *A*; so that the proposition, rightly expressed, is '*A is AB*' (I make here no reference to the difficulties regarding the copula). Thus, taking the

judgment in intension, 'the rose is red' means, not 'the rose is redness in general,' but 'the rose is rose-red.' But though, by this qualification of the predicate, the proposition is brought more nearly into accord with the law of identity, it still does not fully satisfy the requirements of that law. As now stated, the proposition is not solely the expression of identity, but also of the relation of substance (or subject) and inherent attribute. The rose *has* rose-redness; it can not be said that the rose *is* rose-redness. But it is important to note that the law of identity, in itself, gives no warrant for the expression of substance-attribute inherence. While it is true that such inherence always involves identity, it is not true that identity, as purely such, involves substance-attribute inherence. Since, then, the law under consideration is solely a law of identity, it is operative only with regard to that category and can validate no such meaning of attributive relation as is expressed in the intensive meaning of the proposition '*A is AB.*' Hence, if the proposition 'the rose is rose-red' is to be made to accord fully with this law, it must be so transformed that it will express complete identity and nothing more. Thus it becomes 'the rose-red rose is the rose-red rose'; or, to symbolize, '*AB is AB.*'

But it may be denied that '*A is AB*' expresses attribute inherence. This can be done only on the assumption that propositions express solely *extension* and never *intension*. Thus, 'the rose is red' means 'the rose is red-thing,' and this being properly qualified (and consequently quantified) becomes 'the rose is rose-red-thing.' It is true that attribute inherence has here been eliminated from the propositional form; but it has been done at the cost of accepting an entirely erroneous theory of judgment. The assumption that judgments are to be taken only in extension is one that simply makes impossible any judgment at all. For if the subject is a 'thing' and the predicate a 'thing,' they are either different things or one identical thing. If they are different, we have, on the theory of pure extension, no means of passing from the one to the other in the manner of predication. They are two things, and they must ever remain two separate things. The judgment in intension, of course, closes the gap by claiming a 'universal' to be present in all difference of things. If, on the other hand, the subject and predicate are one identical thing, then obviously every proposition should be expressed 'this thing is this thing,' or '*AB is AB.*' But even this is not an adequate formulation, for if the 'this thing' of the predicate is different from the 'this thing' of the subject, the proposition is still not identical; while if the predicate is the identical thing that the subject is, the act of predicating the thing of itself can add no meaning to it, nay, is not even necessary to its self-identical meaning, as Boole himself showed in his

formulation of his 'Index Law.' Hence the proposition rightly reduces to the subject-concept 'this thing.'

Thus, whether we regard the judgment as properly to be taken in intension or in extension, the attempt to reduce it to accord with the law of analytic identity, either by qualifying or quantifying the predicate, inevitably commits it to the form ' AB is AB .' And even this is more correctly to be expressed as the single concept AB .

I refrain from pointing out the sheer thought-suicide that is committed by this mode of reduction. That has been so effectively expressed by many logicians that nothing further need be added. I wish rather to call attention to a less noticed but equally serious difficulty involved in this manner of treatment. In reducing ' A is B ' to ' AB is AB ' (or ' $AB = AB$ '), we have, so far as the relation of AB to AB is concerned, a strict conformity to the law of identity. But (disregarding the inevitable further reduction to the form of a single concept) the question now arises, by what law of thought do we justify the expression of the subject and of the predicate as AB . The legitimacy of this complex-concept is always taken for granted. If, in AB , A and B are different from each other (which they must be unless we are willing to reduce AB to $AA = A$), they are *two* thought-elements united into a single concept. Hence we have in AB a conceptual conjunction of differences. It follows, then, that if AB is *one* thought or concept, we have a *one* that is at the same time a *two*. But if the *one* is the *two*, this goes directly counter to the law of contradiction. If, now, in order to bring the conjunction of differences into accord with this law, we hold that AB is not a *one*, or unity, in the same sense that it is a *two*, or diversity, we must express this, according to the law of identity, by saying that its unity is its unity, while its diversity is its diversity. But if, by its self-identical unity, we mean unity as entirely exclusive of diversity, such unity is perfectly meaningless. If, on the other hand, in order to save meaning, we admit that the self-identical unity is nevertheless a unity in diversity, then we simply push the problem back a step; and we still have on our hands the problem with which we began, of validating unity in diversity. Again, if, by the concept's self-identical diversity, we mean its *unified* diversity, the problem is likewise pushed back without solution. It remains, then, for us to regard the diversity as sheer diversity, *i. e.*, without unification. But the results of such a view are equally disastrous; for, as wholly non-unified, AB is simply the aggregate of A and B ; in which case, the proposition ' AB is AB ' means rightly the two propositions ' A is A ' and ' B is B .' It follows from this principle of reduction that wherever propositions predicate diversity, as in ' AB is AB ,' this must be understood simply as a shorthand expression for the addi-

tion of separate conceptual units. If, then, we expand the shorthand in order to make the content quite unequivocal, the true form of the proposition is a series of propositions, each one of which expresses the self-identity of *one undifferentiated component* of the aggregate-complex, the self-identity, that is, of a bare unit. Hence 'the rose-red rose is the rose-red rose' must properly reduce to 'rose is rose' and 'red is red.' Nay, 'rose' being itself a conceptual unity of complexity (and 'red' being so likewise), must be reduced to its items of pure simplicity. Here, then, we have, in logic, the disintegration of all thought into a sheer atomism. In the absurdity of such a result lies the real refutation of this mode of reducing propositions to the form of analytic identity.

It is true, indeed, that a concept is not a unity in the same sense that it is a diversity; yet this must not be taken to mean that unity absolutely is not diversity and that diversity absolutely is not unity. Unity *is* diversity; and it is exactly this affirmation of a predicate that is *different* from the subject that can not be brought into the straight-jacket of the analytic law of identity.

From this evident failure we turn again to the question how we may provide for the logical possibility of the proposition '*A is B.*' I think that the answer to this question will be found, not in a repudiation of the traditional laws of thought, but in the recognition that the law which makes '*A is B*' possible, is present as the very condition of the possibility of the traditional laws. This has indeed been well understood by the great synthetic logicians; and I am making no claim in this paper to the presentation of a new doctrine. I merely wish, by the help of a slightly different mode of symbolizing the traditional laws of thought, to express the law of synthesis as a direct *deduction* from the traditional laws. The ordinary mode of procedure has been to show the necessity of this law of conceptual-synthesis on broad epistemological grounds, rather than to indicate the manner in which the law may be seen to grow out of the traditional laws and to become, indeed, their intrinsic expression. Such a direct 'deduction,' or drawing forth into explicitness of what is implicit in the traditional laws is, I think, possible with regard to the principle of synthetic thought.

In our ordinary negative propositions, the negation is made *with respect to something*. If I say, 'smells are not sounds,' the exclusion of sounds from smells is not absolute, but partial. Both smells and sounds are sensations; they differ *with respect to* their common sensational quality. Again, if I say, 'smells are not pianos,' the difference is obviously greater than in the former case. Yet it is not a complete difference as to their possession of reality: they are each real. Nor is it an absolute difference as to their possession of possibilities

for good or evil, or for giving pleasure or pain; for they both have such possibilities. Rather, having not only bare reality, but also, among others, the possibilities mentioned, they differ as to the manner in which they possess these. Hence the exclusion of predicate from subject is not absolute, but is one that is made within an identity that holds even in spite of the mutual exclusion.

If, now, we pass to the formula for complete exclusion, '*A* is not non-*A*,' may be we here likewise ask *in what respect* *A* and non-*A* differ? If they differ *in a respect*, then there is a 'something,' a generic quality, in which, or with reference to which, they differ. But this will mean that the difference is not sheer and absolute, but is grounded in an identity that holds notwithstanding the difference. Yet when we ask in what respect *A* differs from non-*A*, our first answer is, 'Wholly.' *A* is in nowise non-*A*, and non-*A* is in nowise *A*. This answer, however, at once shows itself to be an untrue statement of the negative relation involved. For as soon as we declare that *A* and non-*A* are *wholly* different, we admit that they are *not* wholly different in so far as they *agree* in the quality of mutual exclusion of the opposite. Agreeing in this character of mutual exclusion, they differ, indeed, as to the *manner* in which this generic quality is realized: *A* excludes non-*A*, and non-*A* excludes *A*. That is, the content of each exclusion is different, but its nature is in each the same. It is, indeed, just this *identity* of opposite-excluding character that makes possible the negative relation expressed by the law of contradiction.

This presence of identity in order to the expression of difference may perhaps more easily be seen by means of a less subtle reference. In whatever universe of discourse our formula, '*A* is not non-*A*,' may be employed, both terms will always, in some sense, be real. At the least, they will both be real as ideas. If our universe of discourse, for example, be such that *A* is taken to stand for existence, then non-*A* will signify non-existence. But non-existence, as an expression of opposition to existence, is not sheer unreality, for at any rate it is an ideal object of reference. But so, likewise, is existence an ideal object of reference. It is true, indeed, that existence is a 'something more,' which non-existence is not; but this 'something more' is simply the element of difference between the two. Existence and non-existence being each an ideal object of reference, they differ as to the manner in which their generic ideality is in each case specifically realized. Hence here again the difference is *with respect to* an identity. The mutual exclusion expressed by the formula of the law of contradiction differs from any of our concrete mutual exclusions only in that, in the latter, the definite generic identity is implied with more or less clearness; while, in the abstract

formula, that identity is still left almost utterly vague, with the possibility of assuming any definiteness that may be required by the concrete situations. Notwithstanding this, however, we are just as certain in the case of the abstract formula as in that of concrete propositions that ground of identity there must be where there is predication of difference.

A difficulty may perhaps be raised by noting the fact that in such a proposition as 'sounds are not smells' there is a doubt as to the ground of identity; for, if we use the form 'sounds are non-smells,' the identity would seem to be by no means the same as when we say 'sounds are not smells.' In the latter case, the ordinary interpretation would compare smells and sounds in their proximate class, sensations, exactly as when we say, 'red is not blue'; while in the former it would regard non-smells as comprising all of reality that is not smells. It is true that there is this difference in the possible grounds of identity; but it will easily be seen that the presence of this difference is rather an argument in justification of the position taken. It may be true that in the affirmative proposition with a negative predicate the only identity is 'reality' in its barest sense; nevertheless, even as such, it is the generic element which we have claimed to be necessary, the generic which has its specific realization even in mutual exclusives.

It follows, then, that the formula, ' A is not non- A ' does not exactly express its own real meaning. That formula does not (upon pain, if it does, of complete impotence) mean that A and non- A are absolutely excludent of each other; it means that, possessing some ground of identity, these two terms nevertheless differ in the manner in which they possess that identity. We may represent this identity present in all mutual exclusions by the symbol U . The law of contradiction, then, properly expressed, reads: ' AU is not non- AU .'

If this be the real and indeed the only proper expression of the law of contradiction, our next step to the explicit statement of synthetic relation will not be difficult. By ' U ,' we have indicated the identity which both A and non- A are. It follows, then, that A is U and that non- A is U . But A is likewise *not* U ; for if it were completely U , it would at the same time be non- A . Hence A , at once, is U and not U . If, remembering our analytic laws, we look suspiciously upon this result, we are now precluded from condemning it in terms of the law of contradiction, for we have just seen that this law presupposes these very conditions if it is to have any meaning whatever. Hence, with the law of contradiction itself the expression of this very seeming contradiction, we are forced, by the dialectic of the situation, to recognize that in such a relation of subject and predicate is expressed the fundamental nature of all thought.

If, now, (1) A is U , but (2) A is not U , we have in (1) the very form of synthetic proposition which we have been seeking to justify. U is predicated of A , but is nevertheless not completely identical with A . This is exactly the relation which we found expressed in the proposition ' A is B ,' and which the laws in their analytic form could not account for. Since the relations which they bear to A are the same, we may now legitimately substitute B for U . Thus the synthetic proposition has its justification. Indeed, it is now seen to be a correct, though unclear, formula for the real synthetic law of identity.

The three laws of thought will then be properly symbolized as follows:

Law of identity: AU is AU .

Law of contradiction: AU is not non- AU .

Law of excluded middle: Within the identity U , any subject of predication is either A or non- A .

It is true that in this formulation, the law of identity is still, by itself, an inadequate expression of the law of synthetic thought. Notwithstanding this, however, it does not in its present, as in its traditional form, succeed in hiding completely all traces of that synthetic law. For as now formulated, it contains the important symbol AU , which represents a *complex* concept. But such a concept, in so far as it is a unity that is likewise diversity, is the very typical form of synthetic thought. It was because purely analytic thought could provide for no such unity in manyness that we declared the traditional laws unable, on the face of them, to validate even such a proposition as ' AB is AB .' Hence the form, ' AU is AU ,' which is analytic in its subject-predicate relation, exhibits the presence of synthetic thought in the form of its subject and its predicate terms.

The form ' AU is AU ' is especially inadequate, however, in that it fails, in the formulated relation between subject and predicate, to express the fact that all predication of identity may be made only as difference is likewise predicated. This, to be sure, as we have said, is implied in the presence of such a term as AU , but the truth is not made explicit by the exhibition of any difference between subject and predicate. Such predication of difference in the very act of predicating identity is expressed in the proposition ' A is B '; but the formulation here is faulty, since it errs in the opposite way by explicitly stating difference and, except as implying it in the copula, allowing the identity to go unexpressed. Undoubtedly the truer formulation of this most usual and fruitful mode of thought is ' AU is BU .'

The law of contradiction, also, as formulated above, is still by

itself an inadequate expression of the law of synthetic thought. It indeed makes clear, which was not true of the old formulation, the fact that difference, even if outright, is always in terms of identity; but like the law of identity, it fails to express the even more important truth, that all identity must be predicated in terms of difference.

In like manner, the law of excluded middle is still a one-sided expression of real thought. Yet in the present formulation it makes clear not only the fact expressed by the old form, that the world of predication is completely dichotomizable, and in so far systematic, but the further important fact that in being thus exhaustively divisible into two, it still maintains its oneness of generic being throughout the two divisions.

It has, indeed, often enough been agreed that the three laws of thought are each insufficient to express the whole truth about thought. We should not, however, permit them to be so inadequately formulated that they keep effectively concealed all trace of thought that is real and fruitful. With the symbolization just given, it seems to the writer that the truth of the laws in their old forms is preserved, while there is added to this truth of *analysis* the all-important truth of *synthesis*.

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DISCUSSION

THE REALISM OF PRAGMATISM

PROFESSOR COLVIN in his instructive article on Subjective Idealism and Psychology,¹ lets drop this significant remark: "It is an extremely fascinating doctrine, this radical subjectivism, which becomes solipsism when interpreted in terms of the intellect, and *pragmatism when formulated in the categories of the will.*" The words I have italicized are significant because, thrown in incidentally and not in an argument *pro* or *con* as to pragmatism, they reveal what seems to be the general assumption. Accordingly this may offer a fit and uncontroversial opportunity for making a somewhat personal and dogmatic *Auseinandersetzung*.

Speaking of the matter only for myself, the presuppositions and tendencies of pragmatism are distinctly realistic; not idealistic in any sense in which idealism connotes or is connoted by the theory of knowledge. (Idealistic in the ethical sense is another matter, and one whose associations with epistemological idealism, aside from the accidents of history, are chiefly verbal.) Pragma-

¹ 'Is Subjective Idealism a Necessary Point of View for Psychology?' this JOURNAL, Vol. II., No. 9, April 27, 1905, p. 225.

tism believes that in knowledge as a fact, an accomplished matter, things are 'representative of one another,' to employ Woodbridge's happy, because correct, phrase.² Ideas, sensations, mental states, are, in their cognitive significance, media of so adjusting things to one another, that they *become* representative of one another. When this is accomplished, they drop out;³ and things are present to the agent in the most naïvely realistic fashion. 'States of consciousness' refer to *getting* knowledge; to the situation when things as objective fail us; have, so to speak, gone back on us; when accordingly we neither have them to know nor yet to *know with*. It is in this situation, and only in this situation, that 'states of consciousness' exist or have meaning, cognitively speaking. And if I put in the phrase, 'cognitively speaking,' it is only to take account of the emotions; and with reference to the emotions the significant point is that they also arise and function in problematic situations; in situations whose objective determination or character is not known, not presented.

Instrumentalism is thus thoroughly realistic as to the objective or fulfilling conditions of knowledge. States of consciousness, sensations and ideas as cognitive, exist as tools, bridges, cues, functions—whatever one pleases—to affect a realistic presentation of things, in which there are no intervening states of consciousness as veils, or representatives. Known things, as known, are direct presentations in the most diaphanous medium conceivable. And if getting knowledge, as distinct from having it, involves representatives, pragmatism carries with it a reinterpretation, and a realistic interpretation, of 'states of consciousness' as representations. They are practically or effectively, not transcendently, representative. They represent in the sense in which a signature, for legal purposes, represents a real person in a contract; or as money, for economic purposes, represents beefsteak or a night's lodging. They are symbols, in short, and are known and used as such.

Knowledge, even *getting* knowledge, must rest on facts, or things. But the need of truth, of cognitively assured things, means once more that such things are *not* present—just as the beefsteak is not eating, in the situation in which money stands for it. Things in problematic situations must operate through representatives, ministerial agents, through psychical things, which, *for the purpose in hand and for that only*, stand for and thus accomplish what things would accomplish—viz., mutually realistic significance—if they were only there. Psychical things are thus themselves real-

² See *Science*, N. S., Vol. XX., p. 587; and this JOURNAL, Vol. II., No. 5, March 2, 1905, p. 119.

³ The sense in which their value remains will be spoken of later.

istically conceived; they can be described and identified in biological and physiological terms, in terms (with adequate science) of chemico-physical correspondents.⁴ Psychologically, they are themselves literal emotions and felt impulses. Moreover, they are realistically conditioned from the genetic side. Their origin as existences can be stated and must be stated in terms of adjustments and maladjustments among habits, biological functions.⁵ The reproach that has been brought against 'pragmatism' of utilizing biological evolutionary data, might, it would seem, at least have preserved it from the reproach of subjectivism.

In short, the point that the critics of pragmatism have missed with a surprising unanimity, is that in giving a reinterpretation of the nature and function of knowledge, pragmatism gives necessarily a thoroughgoing reinterpretation of all the cognitive machinery—sensations, ideas, concepts, etc.; one which inevitably tends to take these things in a much more literal and physically realistic fashion than is current. What pragmatism takes from idealism is just and only *empiricism*. That, to it, is the real lesson of the subjectivism which has held sway since the time of Descartes and Locke. This lesson learned, we can think freely and naïvely in terms of things—because things are no longer entities in a world set over against another world called 'mind' or 'consciousness,' with some sort of mysterious ontological tie between them. Again, pragmatism has learned that the true meaning of subjectivism is just *anti-dualism*. Hence philosophy can enter again into the realistic thought and conversation of common sense and science, where dualisms are just dualities, distinctions having an instrumental and practical, but not ultimate, metaphysical worth; or rather, having metaphysical worth in a practical and experimental sense, not in that of indicating a radical existential cleavage in the nature of things.

I speak only for myself, but in giving my hearty assent to what Professor James has said about the nature of truth (see this JOURNAL, p. 118, Vol. II.), I venture to express the hope that he also conceives the matter in some such way as I have suggested. Certainly it is the obvious deduction from his denial of the existence

⁴ This possibility of objective statement is, I take it, the meaning of the psychophysical parallelism—if it has any meaning. There is no sense that I am aware of in which their description is to be limited to brain terms rather than to chemical terms, or to terms of changes among extra-organic objects, or to terms of changes among social objects, persons. The point is simply that psychical changes do correspond to changes in reality.

⁵ Pragmatism would thus deny absolutely that psychology rests upon the idealistic presupposition. The psychologist has the same naïve right to things and bodies as has the geologist or zoologist.

of consciousness. It is the witness borne by Professor Mead in his *Definition of the Psychological*. It is what I had supposed to be the only possible outcome of my essays in the *Contributions to Logical Theory*—though I am glad to have this opportunity of expressing my indebtedness to conversations with Professor Woodbridge, as well as to his published articles, for making me aware of the full force of their realistic implications.

In conclusion, I wish to say a word upon the ethical idealism involved. Speaking from the cognitive standpoint, it is difficult to conceive of anything stranger, more curious, more wholly unanticipatable, than that certain things—emotions, sensations—which are biologically conditioned as to their origin, should become bearers of the transformation of things into things mutually representative or significant of one another. But such is the empirical fact. It demonstrates that while ideas, states of consciousness, drop out in our assured esthetic, intellectual and practical transactions with things, leaving a face-to-face or realistic situation, yet their worth, their value, remains in the significance which things have gained as representative of one another. *The increments of meaning which things are constantly taking on is as much the product of psychical existences, as the added significance of words is the result of their use in propositions, i. e., with a context.* They are the media of effecting the transformation of conflicting, unsatisfactory, and consequently fragmentarily significant situations, into situations where things are surely and reciprocally (in an all-around way) significant of one another. Hence the free, the indeterminate, the growing, the potential factor in reality. Meaning, significance is never just predetermined. It is always hanging upon the operation of the psychical, of the peculiarly individual. *Hence morality: the recognition of responsibility for the use of the psychical, as the ultimate determiner of the ways in which the world of all (you and me) who live among things grows in significance.* It is because the psychical is, cognitively, realistic, that morality has an empirically real sanction and yet an ideal bearing of infinite import. It never gets in the way of things of knowledge to obstruct or pervert; but its prior operations control what things become representative of one another, and hence the experienced meaning, or value, of those things.

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REVIEWS AND ABSTRACTS OF LITERATURE

Bulletin de la société française de philosophie. March, 1905. 5 Année, No. 3. Esprit et matière. Thèse: M. Binet. Discussion: MM. Bergson, Darlu, J. Lachelier, Pécaut, Rauh.

M. Binet proposes to define matter and mind, and to present a theory of the connection between them. Reality exhibits two fundamental sorts of elements, sensations and the consciousness which accompanies sensations. The distinction between the physical and the psychical is replaced by the distinction between the object of consciousness and the act of consciousness. The sensational or content element which we find in images, emotions, effort, etc., is not to be regarded as the means by which we know the external world, it is the external world itself. Our sensations are the physical world. Mind is the activity of consciousness; it is not a thing, but a function. In itself, however, mind is incomplete: it requires an object or point of application, and this object is sensation or matter. Former theories of the relation of mind to body made the mistake of supposing that mind could exist more or less independently of body: spiritualism giving mind thorough independence, materialism making mind a product of the body, parallelism positing two coordinate series; whereas in fact mind and body are strictly correlative and inseparable.

The more intimate nature of the mind-body relation is as follows: Two facts which seem incompatible offer the chief difficulty. (a) Our thought is conditioned by a special intra-cerebral motion of molecules and atoms; (b) but this same thought has no consciousness of the molecular motion, is not directly aware of the nervous impulse. A molecular wave must reach a point in the visual cortex before we see the object in front of the eyes. How is it that consciousness ignores the physiological process upon which it depends, and, as it were, projects itself to the distant object? We must bear in mind that in this molecular wave is carried and implied all that we know of the external object which stimulates it. This nerve vibration represents the work of two factors, it expresses the nature of both the object which provokes it and the nervous apparatus which transmits. One of these factors which modify the nerve vibrations is constant, *i. e.*, the part played by the nervous system; the other is inconstant, varying with the changing external stimulus. We may conceive that consciousness, which maintains itself only in change, ignores the constant factor in the nervous vibration, and is cognizant only of the variable element. We are not, therefore, conscious of the constant presence of the cerebral mechanism, but only of the external object which introduces the element of variety. It is the physical world itself which is transmitted in the nervous system, and consciousness perceives it by the analysis of the nerve vibration.

The discussion of Binet's presentation opens upon the question of his fundamental division of reality. It is pointed out by M. Rauh that the distinction merely of content and activity of consciousness quite ignores

the concept of the unconscious. The unconscious is not to be explained as the subliminal, a mere mode of the conscious: it is both the known object and the knowing subject at the time when they are neither known nor knowing. M. Lachelier agrees that there is a mode of existence in which subject and object are not discriminated, but out of which they evolve. This state, however, is not the unconscious, a merely hypothetical condition, but is an 'affective mode,' a 'simple affection,' or 'state of simply living,' an actual known condition which we find persisting in all sensation, perception and thought. Further, certain kinds of sensations and perceptions are more objective than others. In differentiating the subject two sorts of experience are of greatest importance, (a) visual, (b) perception of resistance: an experience of taste, smell or even sound does not necessarily involve a subject distinct from the sensation, but the perception of a color-arrangement, which presupposes the ability to distinguish the contour of the different colors, implies a subject, or an activity whose unity is contrasted with the multiplicity of the colored surface. As to the perception of resistance, it is through the self's overcoming obstacles that the self becomes defined.

The discussion relative to Binet's theory of the union of mind and body is led by M. Bergson. Bergson takes exception to the idea that external perception occurs 'inside the brain'; he would localize it rather in the object perceived. If we ask, "how can I be in the object which I perceive?" he would reply "how can you be in the brain which perceives it?" The self is no more in the brain than in the object outside. The self exists virtually in everything perceptible, and actually in everything perceived. He says, with Leibnitz, that we have a confused perception of the entire universe, but a distinct perception only of that part of the universe upon which we can exercise an influence more or less immediate. If we ascribe to the physiological process more than the function of limiting practically our actions, *i. e.*, if we make it in any sense the cause of perception, we can not escape the hypothesis of psychophysical parallelism.

M. Darlu objects to the original standpoint of Binet's 'subjective phenomenalism.' By calling facts of consciousness physical, Binet is greatly altering current usage; for, in fixing arbitrarily the point where subjective and objective separate he is destroying the real meaning of the objective. In common speech, and still more in science, we call that the physical element of sensation which we recognize as most objective. The element is physical because it is more independent than all the rest of our will, because we are accustomed to measure it, to calculate upon it, to foresee it.

In the above thesis of M. Binet the points, that the content element of consciousness is for us external reality, that content and function are correlative inseparable aspects of consciousness, and that they constitute a distinction of prime importance, are statements highly interesting and comprehensible, but comprehensible only as giving a psychological standpoint. As a metaphysical theory of the connection between mind

and body 'subjective phenomenalism' contains difficulties. The dualism which M. Binet is trying to avoid appears in his own theory at the point where he ascribes to the central nervous system its peculiar function of carrier or supporter of the universe. Differences in nerve-vibration constitute the external world; but what then constitutes the vibrating nerve mass, unless matter and motion are the same? Consciousness discovers external reality by analyzing this molecular motion of the nerve-substance, but if different motions *are* the experience 'green,' 'blue,' 'sweet,' 'hard,' etc., where did we ever get the idea 'molecular motion' as a common substrate for them? What status has a cortical area when it is not functioning? What does it mean to say that consciousness analyzes the nerve-vibration? If everything is either content or act of consciousness, it would seem to mean either that we know the vibration immediately as content of consciousness—which Binet admits we do not, or, it means that the vibration is actually the activity of consciousness. On this latter hypothesis the act of consciousness is reduced to motion of the most materialistic variety.

Again, if act of consciousness and object of consciousness are to stand as the fundamental discrimination in reality, some theory of their correlation must be proposed, unless we are content to accept the Kantian dualism of the *a priori* and *a posteriori*.

The most suggestive contribution to a solution of these problems appears in the criticisms by M. Bergson. For him the subject, or the activity of knowing, is not localized in the brain any more than it is in the whole perceptible universe. What is localized is the practical response to perception. Solicitation to action seems the primal situation within which clear and distinct images emerge; on the other hand, the body, which is the chief instrument in action, is an image among other images or representations. Hence body and mind are interpretative of one another. If this be a just elaboration of M. Bergson's remarks it shows that his point of view is in harmony with other recent doctrines on the psychical-physical question. If one dare generalize, the tendency appears to be to identify the physical with the existential or mechanical aspect of reality, the psychical with the interpretative, teleological aspect. From the view-point of practical necessity the mechanical stands for the past, and the teleological for the future. Such a statement as the last accommodates the point brought forward by Darlu that the physical stands for the commensurable side of experience; for it is the past or accomplished fact which is the basis of calculation, and which is most independent of our will.

A striking omission from the discussions of the Société is the lack of any attempt to discriminate the psychological from the metaphysical standpoint. Indeed, the theory of subjective phenomenalism looks like an effort to erect the psychological attitude into the sole basis for metaphysics. The function of metaphysics would seem to many to include the correlation of the truths of all sciences rather than to adopt the postulates of any special one as final reality. It is out of different phases

of metaphysical inquiry that the special standpoints of different sciences have been generated. It becomes any science to cling to its limitations as its special opportunities, and psychology, having finally attained an individual status, would be better engaged in cherishing this golden egg than in bombarding with it the metaphysical goose that laid it.

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Experimentelle Beiträge zu einer Theorie des Denkens. HENRY J. WATT.
Archiv f. d. Gesamte Psychologie, Band IV., Heft 3. Würzburg.
Pp. 289-436.

This is a study of controlled association, a problem beset with many technical difficulties. Belonging to that class of problems whose practical approach is through the direct medium of speech, it is very dependent on the far from satisfactory methods of speech registration as yet available. The apparatus employed in this instance was of the usual form, including drop-screen, break-make relay, chronoscope and voice-key. The handling of this last instrument has been the Achilles' heel in much work done along these lines, nor, with all the careful handling of the remaining apparatus, do its limitations seem to have been fully taken into account. The promptitude with which this instrument registers the reaction varies considerably according to the phonological character of the initial of the reaction-word. A prompt break never occurs save with an initial explosive, and not always then. A more accurate and hardly less cumbersome form of apparatus would have been the Rosapelly laryngeal recorder, with a tambour for the breath stream of voiceless initials, recording on smoked paper.

The forms of association studied are: genus-species, species-genus, between coordinates, part-whole, whole-part, between parts of one whole. On the basis of the subjects' introspection three classes of reaction are noted. In class *A* there is a single movement from stimulus to reaction; and four subtypes are here distinguished, in which, between stimulus and reaction, there appears either a visual image, a word image, a vague hesitation, or nothing appreciable. The last mentioned, which is of rare occurrence, tends to be the shortest, but its other differentia are probably due to habits of imagery, so that it is doubtful whether it really forms a distinct type of association. In classes *B* and *C* the movement from stimulus to reaction is not single. In *B* the intervening element is highly indefinite, in *C* it is a definite object of an unsuccessful search. These tend to be longer than *A*, and *C* longer than *B*.

The proportion of mediate associations is very subject to individual difference, and also varies with the character of the control. A slight tendency to negative correlation in the number of the two types of mediate association seems to exist for all subjects. Phonetic lapses were frequently observed, and the phenomena of persistent association complicated the results to a slight extent. Throughout, however, the psychological limitations of the problem are only too apparent. The numbers of cases are necessarily small, and the mean variations large,

occasionally 30 per cent. of the average. Controlled association-time is eminently subject to individual differences in experience that can not be analyzed out objectively, and introspective evidence has but narrow limits of validity. The small number of words which it is possible to use as stimuli, and the large constant errors that are introduced if it is attempted to repeat them, constitute other grave difficulties. With whatever care experimental conditions may be observed, and with whatever fullness results are collated and presented, it does not seem probable that under present conditions the problems of controlled association offer other than negative results of value to experimental psychology.

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The Argument for Immortality. A. K. ROGERS. *International Journal of Ethics*, April, 1905. Pp. 323-338.

The motive of the article is to emphasize anew the importance of the idea of immortality for the moral and religious life in view of recent tendencies to assign it a place of but secondary importance. The exact meaning of the concept is not determined, the author confining himself wholly to a defense of its validity. No consideration is given to the argument from revelation, nor to that from spiritualistic phenomena; in the latter case, from the belief that 'the bad company which they keep must necessarily affect the reputation of such facts if not their character.' The metaphysical argument is recognized as invalidated by the passing of the old idea of a soul substance, and the conclusions of science are shown to be wholly negative with reference to the idea. The moral argument is the only effective one. The older form of this, in which the demand is made that happiness be proportioned to virtue, does not necessarily imply the bribe theory of goodness, but only our demand that reality recognize our moral judgments. And 'can virtue stand justified to our minds, except as it does find that external confirmation which immortality tries to postulate?' But, granted that the ethical life must be objectively vindicated, does this imply the stability of the individual life, or is the progress of the race sufficient for the purpose? Moral values are grounded in the relationship of persons and may be said to culminate in love. And 'in its inmost heart love is a relationship which does not stop with those universal qualities of a man which make him simply an actor in the world history. It clings to the very core of individuality itself, and will be satisfied with just this as a living and continuous person, whose place no one else can wholly take.' The demand for immortality is thus not a selfish one, but is the demand that the person whom we love be immortal. And, if we express the nature of God by love, 'could we really respect a God for whom love, or fellowship, meant merely a temporary or passing phase of his experience, whose object was called into existence only to be dismissed again from the scene?'

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JOURNALS AND NEW BOOKS

AMERICAN JOURNAL OF PSYCHOLOGY. April, 1905. *A Study of Precocity and Prematuration* (pp. 145-183): LEWIS M. Terman. - This is a descriptive study tending to show some of the manifestations and tendencies of early maturity of bodily and mental functions. Especially emphasized is the baneful and retarding influence in mature efficiency of the too early manifestation of sexual feelings, nervousness, overeducation, and religious convictions, and also the relation of these to criminology in the earlier years. *Anent Psychophysical Parallelism* (pp. 184-189): EDMOND MONTGOMERY. - The author arrives at the duality of the world idea by being compelled to interpret as different another's consciousness and that consciousness as conceiving some external object. Also the significance of this for psychology and epistemology is stated. *Song and Call Notes of English Sparrows when Reared by Canaries* (pp. 190-198): EDWARD CONRAD. - An experimental study. Two young sparrows were placed, before they had learned any of the calls of sparrows, in a cage with some canaries. At first they used the sparrow calls, but soon forgot these and learned the call notes of the canaries with whom they were associated, as well as some of their songs. On again being placed with sparrows, however, they soon returned to the language of sparrows. *Eye Movements* (pp. 199-207): BERNICE BARNES. - Some experiments to test the validity of Listing's and Donder's laws. The same degree of torsion was found whether the eye moved across the field diagonally, or when passing from the primary to a secondary and then across to the point. Donder's law was found to hold, though there was not the slightest evidence of Listing's law. *The Problems of Experimental Psychology* (pp. 208-227): E. B. TITCHNER. - The address given before the congress of Arts and Sciences at St. Louis and previously published in one of the November numbers of *Science*. *Experimental Psychology in Italy* (pp. 225-227): G. E. FERRARI. - The writer corrects some impressions given in an article on the same subject by a fellow countryman, and published in the *American Journal of Psychology* for October. *Proof and Disproof of Correlation* (pp. 228-231): C. SPEARMAN. - This is an answer to some criticisms of the author's statements and methods of correlation. He especially attempts to show that roughness in measurement can not disprove a positive correlation, though it may a negative result. *The Significance of the Human Hand in the Evolution of the Mind* (pp. 232-242): ROBERT MACDOUGAL. - An attempt is made to show that since the hand is fundamentally an organ of expression, its mechanical, tactual, perceptual limitations imply a concomitant narrowness in the mental realm.

REVUE DE METAPHYSIQUE ET DE MORALE. March, 1905. *Définitions fondamentales (Vocabulaire logiquement ordonné des idées les plus générales et les plus abstraites)* (pp. 153-192): SULLY PRUDHOMME. - An attempt to give definitions which can be used as standard in philosophic discussions. About seventy concepts are defined, such as *being*, *nothing*, *existence*, *thing*, *function*, *condition*, *difference*, *substance*. *Sur*

la logique de l'invention (pp. 193-223): E. LE ROY. - Invention rises from the dark, and contradictory in the mind; needs no rules of methods, even defies the laws of logic. The virtues of contemplative thought are the vices of creative thought. Invention is helped by cultivating respect for images and reactions; such is the spirit of the *philosophie nouvelle*. *Les principes des mathématiques* (pp. 224-256): L. COUTURAT. - According to Dr. Veblen's system, descriptive geometry is based on two concepts (the point and the relation of order between three points) and twelve axioms. These define a categorical, not a disjunctive, system. Metrical geometry demands also the concept of size. Pure geometry uses points not as being spatial positions, but as abstract terms which enter into certain ordinal relations. It is not the science of real space, but a branch of the logic of relations. Applied geometry is an experimental science. *Études critiques: Myers, La théorie du subliminal* (pp. 257-282): H. DELACROIX. - Telepathy is far from being established. Experimental metaphysics is essentially chimerical. Spirit or soul is a transcendental concept, and could not in any case be proved empirically. *Une nouvelle tentative de réfutation de la géométrie générale* (pp. 283-290): E. DELSOL. - Answer to M. Techalas' various criticisms of the above work of M. Delsol. *Livres nouveaux*. Thèses de doctorat.

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. February, 1905. Band XI., Heft 1. *Über Notwendigkeit, Wirklichkeit, Möglichkeit und die Grundlagen der Mathematik* (pp. 1-26): K. GESSLER. - The necessity of mathematical, as compared with naturalistic demonstrations depends upon the relative ease and simplicity of the chain of propositions leading to certain empirical facts. The *existence* of these latter facts is a complex question, calling for gifts not essentially mathematical. Examples are the existence of limits, of cardinal numbers (Cantor), and the 'possibility' of certain processes and equations. *Bewusstsein und Wirklichkeit* (pp. 27-45): A. GUREWITSCH. - Consciousness is perception, thought, feeling, will; reality is nature, life and history. With regard to these two fundamental concepts eighteen others may be asserted, such that were any one of these taken as the point of inquiry consciousness and reality would in turn appear as in like manner predicable of that. *De Lege Motus* (pp. 47-60): B. LEMCKE. - Any motion once begun can never cease. Rest, as the lack of motion, is never perceived; while to imagination it appears as the terminus of decreasing motion, to reason it is the limit of such a motion and never comes to existence. *Der energetische Mutualismus* (pp. 61-85): F. G. MARENZI. - Energetics is the all-embracing science, and as a metaphysics substitutes a *mutualism* for a monism everywhere. For example, God would be known of man, man would know God. *Theistic Idealism* (pp. 86-104): J. LINDSAY. - Idealism is, no doubt, the philosophy destined to prevail; but not the Hegel-Royce type, that makes our consciousness a part of God's, or God the mere ideal of man. God's immanence must consist with his absolute character. *Jahresbericht; La philosophie en France* (pp. 107-120): C. BOS. - Special attention is given to Stirner's

'L'individualisme anarchique,' and A. Levy's 'La philosophie de Feuerbach.' *Neueste Erscheinungen*.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOCIOLOGIE. *Atomistik und Energetik vom Standpunkte ökonomischer Naturbetrachtung* (pp. 1-25): H. WOLFE. - In this epistemological essay it is maintained that while in the molecular theory full justice is done to the individuality (*i. e.*, the ultimate uniqueness) of bodies, in the theory of energetics that is not the case. Two types of energetics. *Die Grundlagen des natürlichen Monismus bei Karl Christian Plank* (pp. 28-66): H. PLANCK. - Planck, like Spencer, held that only growth, not existence, can be described, that it has but two characters, attraction and repulsion, exemplified here in sensation and in pure thought. Conclusion follows. *Die Gliederung der Gesellschaft bei Schleiermacher* (pp. 67-110): G. STOSCH. - The philosophical service of Schleiermacher is to have grasped in vital fashion the secret of individuality, that each man expresses the universe in a particular manner. Antiquated though his method of classification is, yet the inductive method can not dispense with such speculations as his. *Besprechungen, Duplik*: H. SPITZER. *Zu neuerlicher Abwehr*: S. WITASEK. W. Windelband, *Lehrbuch der Geschichte der Philosophie*: W. REGLER. H. Orestano, *Le idee fondamentali di Federigo Nietzsche nel loro progressivo svolgimento*: H. MÖLLER. B. Russell, *The Principles of Mathematics*: F. HAUSDORFF. *Philosophische Zeitschriften*.

Baird, J. W. *The Color Sensitivity of the Peripheral Retina*. Washington, D. C.: The Carnegie Institution. 1905. 80 pp.

Joel, Karl. *Nietzsche und die Romantik*. Jena und Leipzig: Diederichs. 1905. Svo. 366 pp. 9 M.

Kleinpeter, H. *Die Erkenntnistheorie der Naturforschung der Gegenwart. Unter Zugrundelegung der Anschauungen von Mach, Stallo, Clifford, Kirchhoff, Hertz, Pearson, und Ostwald*. Leipzig: Barth. 1905. Svo. 156 pp. 3.80 M.

Motora, Y. *An Essay on Eastern Philosophy*. Leipzig: R. Voigtlander. 1905. Svo. 32 pp. 0.80 M.

Princeton Contributions to Philosophy. Edited by Alexander T. Ormond. Vol. I. No. 4. April, 1905. *Metaphysical Elements in Sociology*, by Philip H. Fogel. 56 pp.

Roark, R. N. *Economy in Education*. New York, Cincinnati, and Chicago: American Book Company. 1905. 12mo. 252 pp. \$1.00.

Ruyssen, T. *Essai sur l'évolution psychologique du jugement*. Paris: Alcan. 1904. Svo. 380 pp. 5 fr.

Thilo, C. A. *Fr. H. Jacobis Religionsphilosophie*. Langensalza: Beyer & Söhne. 1905. Svo. 54 pp. 1.20 M.

Thilo, C. A. *Kant's Religionsphilosophie*. Langensalza: Beyer & Söhne. 1905. Svo. 65 pp. 1.20 M.

Ueberwig-Heinze. *Geschichte der Philosophie*. Neunte Auflage. Bd. II. *Mittelalter*. Berlin: Mittler und Sohn. 1905. Svo. 403 pp. 8.50 M.

University of Iowa Studies in Psychology. Edited by Carl Emil Seashore. Psychological Review, Monograph Supplements, March, 1905. Contents: *Perimetry of the Localization of Sound*, by Daniel Stark, 45 pp.; *Periodicity and Progressive Change in Continuous Mental Work*, by C. E. Seashore and Grace Helen Kent, 56 pp.; *A Case of Vision Acquired in Adult-Life*, by J. Burt Miner. 16 pp.

NOTES AND NEWS

THE University of California has issued the following announcement regarding its publications in philosophy: "The University of California Publications in Philosophy are planned to contain constructive and critical investigations in the whole field of Philosophy, including its several departments of Psychology, Observational, Experimental, and Rational; Logic and the Theory of Knowledge; Metaphysics; Ethics; the Philosophy of Religion; the History of Philosophy; Political Philosophy and the Philosophy of History; and Cosmology, or the Philosophy of Nature. They will consist of writings by the Staff of the Department of Philosophy, by its graduates, by its actual students, or by others whom the Department may invite, and will be under the editorial supervision of the head of the Department, Professor G. H. Howison. The first volume, under special editorship, has just appeared. It is in the form of a *Festschrift*, dedicated to Professor Howison on the occasion of his seventieth birthday, and contains papers by twelve graduates of the Department, on various philosophical problems. The second volume is now in progress and will be published in separate numbers. The first number will consist of two essays by Professor Howison, on "The Place of Philosophy in the Field of Knowledge," and will be principally concerned with a systematic inquiry into the Conceptions Fundamental to Philosophy and into its Methods. The numbers will appear at irregular intervals, and each volume, when complete, will contain approximately 300 pages. The subscription price is \$2.00 per volume."

IN accordance with the tutorial system adopted by Princeton University, perceptors with the grade of assistant professor have been appointed in the department of philosophy and psychology as follows: Professor R. B. Johnson of Miami University, Dr. Adam Leroy Jones of Columbia University, Professor W. T. Marvin of Western Reserve University, Dr. Wilmon H. Sheldon of Columbia University, and Dr. E. G. Spaulding of the College of the City of New York.

THE seventieth birthday of Professor Caesar Lombroso will be celebrated in connection with the Sixth International Congress of Criminology, which meets at Turin next year.

DR. E. B. HOLT has been advanced to the position of assistant professor of psychology at Harvard University.

DR. J. CARLTON BELL has been appointed instructor in experimental psychology in Wellesley College.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE PERSONAL AND THE FACTIONAL IN THE LIFE OF SOCIETY

LONG ago Plato drew an analogy of the soul or self, the human individual, to society, and so too Aristotle, though not to society, but more broadly to all nature, and the one analogy or the other has had a good deal of fascination, not to say intellectual satisfaction, for thinking men ever since. Yet, so far as I am aware, at least one of the implications of the idea has never been fully stated or appraised. Moreover in my opinion this is much to be wondered at, since a strong case for personality or individuality is involved and since also some real light is thrown upon certain problems that time and again have perplexed the minds of men and that at the present time, of course in modern dress, are of absorbing interest. To these matters, then, I would now ask attention, namely, to the case for personality implied in the analogy and with regard to the problems just now said to be illuminated, especially to a suggestion bearing on the solution of the issues now under so much discussion between the pragmatists and their many assailants.

But before entering upon these special undertakings let me say that the time-honored analogy itself has, and most properly should have, the freedom of the city of logic. Of course other than logical approval of it might be cited. Biology and sociology and psychology might be called in to give testimony, and out of the past, the more recent past, Leibnitz with his *lex analogiæ* or, for that matter, with the general import of his monadology, might be appealed to. But without tarrying for support from these quarters, highly respectable though they are, I make a simple, yet certainly timely and—with apologies for so much emotion—soul-satisfying reference to the logic in the case. Thus, in these enlightened days, to say nothing of Plato's time or Aristotle's, how can the true part of anything ever dare *not* to have an analogy, even a 'one-to-one correspondence' to the whole in which it is comprised? And—this being, as in due time will appear, quite as important—how can any whole ever have parts without having also, actually or potentially, parts within

parts? In fact, given any divided whole, the division, however far it may be carried, will always involve at least these three typical factors: (1) the individual as the part still undivided, though at the same time necessarily inwardly alive with the self-same differential operation to which it has owed its origin; (2) the group-part or class, which for the convenience of the adjective form may be known also as the faction and which was important especially to Plato in his analogy of the individual to a class-divided society; and (3) the all-inclusive whole. And among these factors in all possible ways, that is, even between individual and individual, or individual and group, or group and group, as well as between individual and whole, an analogy in terms of all the various elements of the original differential operation will persist; such, almost truistically, is the logical condition of division or differentiation.

The analogy, however, must itself share in the differentiation; it must have as many various forms as it finds expressions. Although in every case the relation must be one of analogy, it can never be of the same order or degree. That of the individual to the group or faction, for example, must be qualitatively distinct from all others, say from that of the individual either to another individual or to the all-inclusive whole. Not even the much used and very commonly abused distinction between small and large writings can adequately represent the differentiation here in question, for consider how various, internally as well as externally, are the terms among which the analogies maintain. Thus, factional differences are bound to be sharper or wider, they are inevitably more deeply set and more exclusive of each other than individual differences, and in consequence the faction is, not, indeed, absolutely, but characteristically special or particularistic. Because of its intermediate position between the individual and the whole it is, so to speak, only one among many instead of being, as in the cases of the two extremes, many in one. It conspicuously appropriates a particular character, and while not excluding any of the other characters that are incident to its own production, it includes these on the whole only in a negative way, in the way in which opposition includes what it opposes, or action the reaction it always implies, or in general any different thing, the thing or things from which it is different. The extremes, however, as was said, are each 'many in one.' The individual, being still only potentially divided and being, as it were, the latest residence of the differential operation, is always, in some measure, directly and positively active with all the factors of the operation, and this in spite of the special restraints of any particular class-affiliation, and the whole is macrocosmic with reference to the microcosmic individual, but is, at the same time, qualitatively distinct. Whatever

a merely formal logic might say, real logic requires that at most macrocosm and microcosm are only metaphors of each other. Even their difference of size would be quite enough to distinguish them at least as sharply as the same difference distinguished imperial Rome from her prototype the Greek city-state. Can the whole and the part be one or many or many in one, can they be real or alive or conscious, can they be personal, can they be anything whatsoever in qualitatively the same way? Men have often seemed to think so, but without any warrant whatsoever. The faction, then, the individual and the whole are qualitatively different expressions of the elements of the operation that has made them, and their relations, although always dependent on analogy, must be equally various.

But now to leave these questions of logic and to turn directly to the first of the two special interests of this paper, namely, to the case for personality, perhaps no idea will be more immediately useful than that of what is often styled the unity of experience. The unity of experience is neither more nor less than the totality of human relations. It is the experience-whole comprising all the phases of human nature, which is to say, all the actual and possible relations of man to nature in general, or all the manifold states and activities, stages and events of human life. Human nature is analyzable in an indefinite number of different ways; it is, to illustrate, physical, mental and spiritual, or more elaborately it is athletic, industrial, political, intellectual, moral, esthetic and religious, and in its social life has developed institutions answering to these different phases of itself; it is, again, lawful and lawless, young and old, conservative and radical, sympathetic and selfish; but, whatever the mode of analysis, the unity of experience embraces all the elements, aspects or relations that the analysis reveals. In a word, in the language of the simple logic indicated above, the unity of experience is only the all-inclusive whole out of which has sprung the differential operation that has made human society and human history, that has given rise to the social class or faction and the individual person.

The person, then, as the real individual, as the part that is still undivided, that in itself is quick with the differential operation, is thus the living, integral exponent of the unity of experience. In him every phase or part of what is possible in human experience moves with some power. He is religious, political, industrial; or spiritual, intellectual and physical; or good and bad, conservative and radical, all in one. Hence the familiar idea of the universality of any side of human nature, of the political side, for example, or the religious or the physiological. Personally all individuals are all things in one.

But the story of personality hardly ends here. Before any

appraisal of what has so far been said can be properly made attention must be turned to the social class or faction. If the person in his nature is general or all-inclusive with reference to the unity of experience, the factional life is special, particular or partial; it is one-sided and outwardly exclusive. Sociologically as well as logically factional differences are, as has been said, wider and sharper than individual or personal differences. Personally all men are born equal; not so factionally. Personally all men are free, socially approachable, liberal in thought and act; not so factionally. Personally all are the same unity or whole; not so factionally. Judged from its classes, society is even a hot-bed of specialism, its classes always tending to become castes, and of hostility, its differences inducing open conflict.

Whence, to emphasize at once a most important conclusion, the typical relation of the person to the class is not, as so often said or implied, that of the particular to the general; instead it is that of the general to the particular, of the whole to the part. Only, to say no more than this would be a serious mistake, for at least in two ways this statement must be modified. Doubtless the required modifications are directly consequent upon the nature and origin of the relation, but, nevertheless, they need to be carefully remarked. Thus, logically and sociologically, factional differences are not merely wider and deeper; also they imply higher development. Factional life may be special, but through the strength that union gives and the power that springs from repetition or imitation, it attains to a high degree of skill and insight. Again, factional life, like that of corporations, lacks soul; it tends to become formal and mechanical and in the sense that this indicates, it is static. Between individual and class there is a difference very like that between impulse and habit or organic life and mere physical process, or, say, between human nature in terms of its life-principle, of its distinctly dynamic character, and in terms of its establishments or institutions. Accordingly, the relation of the person to the class is indeed that of the whole to the part, but of the whole in a state that is relatively undeveloped to the part, more or less highly developed, and of the whole in the form of a living functional activity, the differential operation of the unity of experience, to the part in the form of an institution.

From all this it appears also that the labor involved in the maintenance and development of human life is divided between the person and the social classes in some such way as follows. The class life stands for analysis and special development and establishment; personal life, for synthesis and vitality. The factional life of the class is specialistic and reaps for human nature all the familiar advantages of specialism; the personal life is general or universal

and saves human nature from the disruption and the stagnation to which specialism always tends. And while so to define the difference between person and class or to regard the relation of the two in the way suggested, even with the qualifications that were promptly added, may involve some abstraction and so some limitation of the view, nevertheless, the view is as real and as significant at least as the actual conditions upon which it rests. Even though persons may be differentiated from each other in an indefinite number of ways, no two being personal, materially, in the same way, still the relation of whole to part, subject again to the distinctions of development and of dynamic or static character, remains significantly a typical relation of the person to the class.

And, if this be the typical relation, then not only is the story of the person seen to be inseparable from that of the class, but also there is clearly a real place in social life for the person. Factional life lacks completeness and vitality, and personality, the living, integral expression of the unity of experience, supplies these defects. True, a conflict of classes or factions may always be counted on, since the unity of the total life, which, of course, includes the classes, will prevent their ever being indifferent to each other, and this conflict will make for both completeness and vitality, but negatively, indirectly, always as if from outside. Only through the person can vitality and completeness be secured positively and directly and immediately.

The person, furthermore, because of his particular class-affiliation, what with the attainment in the way of skill and insight which this imparts, is always under the constraint, not merely of overcoming the specialism, but also of applying its special training to all sides of his nature. Out of the depth and the breadth of his own personal character he must ever react against the narrowness and the factional ritual, and taking this ritual—or professional technique—to be valid mediately rather than immediately, in spirit rather than in letter, must ever seek to translate its factional experience to all parts of his life. Only so can he be true both to his special classification and to his personal wholeness.

But is such translation possible? On its possibility the case for personality here in question must finally depend. Logically there can be but one answer to this question, and that an affirmative one, since analogy, the condition of translation, must be universal among the parts of any unity as well as between any part and the whole. No two parts, it is true, can be literal, prosaic reproductions of each other, but metaphors of each other all parts are bound to be, so that any acquired power of thought or action, however special, may and must have meaning for the whole life of the person. Accordingly,

with the acquired freedom of any part the metaphors relating part to part may, if not must, flash to the remotest regions of the person's experience-world. The left hand with its unconsciously developed power, of course usually unexercised, of mirror-writing, affords only a very crude illustration of what this implies.

Psychology, it is conceded, has sometimes questioned the conclusions of logic in this matter. Quite properly, I doubt not, science in general has never been in the habit of trusting the leading of mere logic in the solution of its problems. But, be that as it may, I think in this particular matter that no psychologist has ever succeeded in making out a negative case. A few have tried to do so, have thought themselves for a time successful, and then in the end, though not without some reservations, have gone over to the other side. Probably their undertaking has been inspired by the extravagant views sometimes entertained, whereas if it could be remembered that no special training could be literally applicable beyond the particular sphere of its development, the relation between part and part of human nature being only analogous and metaphorical, and that in any case special training when artificially—experimentally?—acquired or when a result only of an imitated routine can hardly count as conclusive evidence, the problem would lose character and psychology would be ready even to accept the logical solution. Logically, then, the translation is possible and psychologically, to say the very least, there is no real evidence against its possibility.

As to the translation being positively natural or necessary as well as possible, the suggestion may not be impertinent that what is truly possible must be also real, that is to say, certain of fulfillment or rather somewhere and somehow, in some manner and in some degree, actually in expression. Even the possible has never been made out of nothing. Moreover, the translation now in mind, plainly can require nothing unnatural. It exacts only that all the different elements of experience, whether as personally or as factionally manifested, shall be true to their origin. The obstacles to translation, that seem obstacles because the analogies are metaphorical instead of literal, can be only apparent, because already they have been overcome by the very differential operation that has made person and faction.

And, the person being at once the living integral exponent of the unity of experience and the member of some class or faction, translation is his most characteristic activity. In it we see him a leader by nature. In it lies his genius. Indeed it is that which makes the great leader or the great genius, for through it the person is ever showing himself transcendent of his class and training, of the institutions that have brought him up. Factional life, further-

more, develops through imitation and repetition, but personality through invention. Invention, the application of special development beyond the sphere of its attainment, is only the psychological term for what sociologically is leadership. In the theory and in the practice of art, morals, religion, politics, science and all the other special sides of experience, the factional and the personal are to be distinguished in this way; witness the familiar antitheses between the typical and the vital in art-expression, the formally ideal and the useful or pleasant in morality, the legal and the sovereign in politics, the orthodox and the spiritually alive in religion, technical skill and real insight in science, and so on. These antitheses are all very important to the understanding of human experience, particularly of its history, but they are frequently seriously misapplied. Really they show the personal ever asserting itself against the factional; the living whole against the developed, established part, and always in order that the whole, overcoming the exclusiveness of the part, may translate and appropriate its acquirements. Individualism some have called the movement; others, liberation of the spirit; and both accounts are correct. When has individualism not brought cosmopolitanism or universalism? The individual being the living integral expression of the unity of experience, how could individualism have any other result?

So there is a case for personality in Plato's or Aristotle's analogy of the part to the group-divided whole. The person has in social evolution a rôle that is as distinct as it is necessary and as real as the mere difference between part and whole. As at once a corrector of partiality and a translator and distributor of special development, he holds a place of honor that can not be assailed.

It would be interesting now to consider in some detail the value of personality, as so conceived, to history and to sociology, and to show in particular how the person can be real and vitally individual and yet be at the same time party to the life of an organic society. Perhaps no more serious difficulty has confronted the organic theory than just this of finding a place for a genuine personality. And, apart from history and sociology, may not the use here made of the distinction between part and whole, group and individual, have its interesting application to psychological doctrine, especially to such a difference as that between perception and conception? But all these subjects, however attractive, can receive only mention. This paper is already unduly long and a second topic, namely, the suggestion in the old analogy that throws light on the issues raised by pragmatism, still remains to be examined.

Into the more serious intricacies of the problems of pragmatism I have no intention of going. I wish only to point out that in

dealing with any of those problems it must be important to distinguish carefully, as many certainly do not, between the personal and the factional in experience. Candid recognition of this distinction with all that it involves would hardly clear up all the obscure places, but it would, I feel sure, remove a good deal of the obscurity and confusion that still prevail. Thus, for experience in what I should call its factional, professional form, pragmatism can not fail to seem quite inadequate. It makes experience relativistic, fluent, intangible. It lacks seriousness almost to frivolity. It has no true sense of most ordinary proprieties of logic and metaphysics. But professional experience with its many familiar conceits, for example, of art for art's sake, science for science's sake, religion a sacred trust, business on strictly business principles, logic and ethics both normative sciences, and so on, is not all that there is to experience. Professional experience, always institutional in character and accordingly always presuming upon both formal and material objectivity, demands something in the nature of an *a priori* sanction; involving as it does the formalism of factional life, and the conservatism, too, as well as the formalism, it demands not only an *a priori* but also an absolute, even an absolute with all the virtues, not to add all the vices of brute self-identity; it can, in short, regard reality only as the reality of the institution, though it may get so far as to reduce the institution epistemologically to a transcendental form and metaphysically to a thing-in-itself, or some equivalent thereof. But, once more, experience neither begins nor ends with its factional, professional manifestations, important as these are. The personal has always to be reckoned with, too, and the person, as if the king who can do no wrong, being legally or institutionally supreme and being therefore free from any implicit, unquestioning respect for the mere majesty of the *a priori* or the sacred prerogatives in the self-identity of the absolute, makes demands of his own, and these pragmatism has tried to satisfy.

Wherefore, in all fairness, both pragmatism and intuitionism—if this be the best single name for the assailant of pragmatism, are relative; the former to experience as personal, the latter to experience as factional; and recognition of this common relativity should be of some help towards their reconciliation. Only let no one waste any of his fine sentiments over the peace here in prospect. Quite reasonably one may still believe that their opposition is their real peace, that they are equally necessary to a growing experience. In theories of experience should not the conflict between the personal and the factional be quite as strenuous and persistent as in the real life to which the experience belongs? As for the real life, it may not be unpardonable to say that its peace certainly is conflict.

Moreover, for a final word, both pragmatism and intuitionism being relative and so only partial truths, it is plainly indiscreet for the advocates of the latter to count on refuting the former by exposing its one-sidedness, as some writers in spirit if not in letter seem to be doing. In the realm of philosophical theory, as elsewhere, people occupying crystal palaces should not throw boulders. There is a case for pragmatism in just so far as there is a case for personality, and in any event the case for pragmatism is just as strong as that for its resentful antagonist. If certain people find themselves quite unequal to the task of harmonizing the two gospels they would do well to give up systematic philosophy altogether and turn liberally eclectic.

The pragmatist is no regicide. He has not slain the absolute—absolutely. Some seem to judge him as if he had. But this he is: a protestant who would exalt faith above formal reason; the real spirit of absolutism above an hypostasized, self-identical reality; life above its institutions; the personal above the factional and professional.

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RECENT THEORIES OF GENIUS¹

THE literature on the subject of genius during the last two years presents two tendencies: negative, against the Lombrosian or pathological school; positive, toward the explanation of genius as a superb synthesis of normal functions. To this sublimation of normal psychology may be added a trend toward the subliminal. Besides the academic views there is a popular attempt to make genius a manifestation of the unconscious, a mystical flowering of a mysterious secondary personality. It is unnecessary to recall the familiar contentions of the Lombrosians regarding the man of genius as an aberrant type. There is an obvious inconsistency on the part of those anthropologists who give as characteristics of genius such antithetical qualities as precocity and stupidity, heightened and lowered sensibility, hypermnnesia and amnesia, and thereby include the most famous of men in the drag-net of degeneration. These things are not to be considered as marks of alienation, but as signs of the nervous instability of a rapidly changing species. Hence the genius should be compared not with the lunatic or criminal, but with the child. As President Stanley Hall has recently said:

¹ Read before the American Psychological Association, Philadelphia, December 30, 1904.

"Geniuses are always the apotheosis of adolescence. At this age all may be said to be normally geniuses, some in slight and some in high degree, some for a fitting moment and some for life. According to the severe and minute criteria of the Lombroso school, perfect sanity is a painfully limited, commonplace and stupid thing, which very few of the great and good of the world have enjoyed. Like every conception based on averages, it is lacking in all individualizing traits, and has lost sight of variation. More than almost any other writer on abnormalities, this author lacks all appreciation of adolescence, which always involves more or less psychic inebriation. He fails to see that excess of normal vitality not only safely can, but must, explore the beginning of many morbidities, both to know the more varied and intense possibilities of human life and to evoke the sanitizing correctives."²

Over against the degenerative theory there has recently been put the physiological. This considers genius a superior faculty, but always in exclusive and perfect relations with the physiological conditions of the organism in general, and of the nervous system in particular. This hypothesis of Vincenzo Allara,³ as yet presented only in a tentative form, has the advantage of taking account of pathological conditions, transitory or permanent, inherited or acquired. Thus it correlates certain abnormalities with the processes of inspiration, by claiming that the various stigmata irritate and increase the functional activity of the brain cells. In criticism it may be allowed that *ubi irritatio, ibi affluxus*, yet to make genius a higher faculty, entirely physiological, is as extreme as the explanatory statement that all intellection, from imbecility to normal thinking, consists of emanations or secretions of the nerve-cells. Allara's purely physiological theory, with latent references to hypothetical neurons, has its deficiencies. It is, nevertheless, to be hoped that he will work out those distinctions, for which exact words are lacking in English, between 'genials' and 'genioids' (*geniali, genioidi*). An insistence on these terms would lead to the avoidance of the Lombrosian confusion, and many that are now put in the hall of fame might better be placed elsewhere.

The most effective criticism of the last edition of the '*Man of Genius*' is made by Professor Nazzari in his extended work '*Le Moderne Teorie del Genio*.' Passing by that obvious question-begging statement that sane men of genius have unperceived defects, Lombroso is attacked in his persistent contention that the nature of genius is necessarily epileptoid, since the latest investigations show that the epileptic attack with consciousness is similar to the creative

² 'Adolescence,' I., 320-1, New York, 1904.

³ 'Sulla quistione del genio,' *Arch. f. syst. Phil.*, X., 2, 1904.

act of genius. Venturi upholds this view by suggesting that epilepsy acts as a safety valve; but Nazzari claims that there is here a failure to distinguish between two kinds of degeneration, that of body, and that of mind. Even if there be degeneration of certain organs, there need not follow the involution of the entire organism. Allowing that a morbid state may actually indicate progression, may be a sign of disintegration preparatory to a higher evolution, it is held more generally true that the impulse to inspiration comes from certain favoring organic dispositions consisting generally of the excitation of the cortical centers through increased nutrition following on the greater flow of blood.

Further modifications of Lombroso's views are to be seen in his followers outside of Italy. Nisbet once held to the close analogies between genius and insanity, such as marked eccentricity and derangement of the emotional basis. He now uses as synonyms for madness such qualifying terms as nerve disease, nerve disorder, unsoundness. But it is in Germany that the most sensible reaction is to be perceived. Nordau is modifying his identification of epilepsy with inspiration, of genius with degeneration, while Moebius in his 'Ueber das pathologische bei Goethe' contends that the man of genius is a production of evolution, not of degeneration. The latter adds that the vigor of genius, compared with that of the ordinary man, has a tinge of madness, yet this does not interfere with marvelous productions. A morbid interpretation of this statement is guarded against by Flechsig's explanation, that when artists become insane they lose their creative power, and that their great capacity for attention is in marked contrast with the rapid mental exhaustion of the unsound. So far these views appear merely a contradiction of Carlyle's saying regarding the infinite capacity for taking pains, or, put into modern terms, that mere industriousness does not make captains of industry.

While accepting Flechsig's conclusion that the brain of the genius is distinguished by greater excitability, greater richness of organization, Nazzari adds that there is no inheritance of cerebro-anatomical structure, but only transmission of vague tendencies and predispositions which 'perhaps have their base in a certain functional orientation of the nerve-cells.' As betraying the figurative inconsistency of this passage, it is elsewhere implied that this 'orientation' is inherited, for the pathological factor is said to act as a dissolvent in the progeny of genius. This is likewise an implicit contradiction of Nisbet's principle, that genius tends to reappear in families, a view which a compatriot of Nazzari has also questioned. Professor Renda, in his 'Destiny of Dynasties,'⁴ has shown that the endowment of unusual mental force in the founder of a

⁴ 'Il Destino delle Dinastie, l'Eredità Morbosa nella Storia,' Torino, 1904.

family tends to disturb and disrupt the organism of his descendants. Applying Galton's law, under Pearson's formula, it is well-nigh proved that exceptional talent is dissipated in the pedigree with the rapidity of a geometrical progression.

Turning from these psychopathic interpretations to the more positive theories of genius, Nazzari inclines to an objective standard. In place of Renda's criterion of exceptionality he puts objective excellence; in place of Nisbet's contention, that genius is a mere *sport* or variation, betraying lack of adaptation to environment, he holds that environment is an actual stimulus; not an obstacle, but a coefficient to ability. Accepting Professor Baldwin's principle, that the genius, in contrast with the eccentric, awakens admiration because of the extraordinary sanity of his social judgment,⁵ it is shown that this is because he has overcome the obstructions of environment, has struggled successfully against that natural selection which suffocates the inferior. In connection with the dictum that the manifestations of genius are incomprehensible without the reaction of a vast social sympathy, we may put the views of Professor Royce on the conditions of mental initiative. In treating of the higher scale of mental existence he says there is 'a constant tendency to the appearance of variations of individual conduct whose precise details are not predetermined by heredity, and yet are not easily to be explained merely in terms of docility.'⁶ In confirmation of this current opinion may be put the statement of Professor Stratton, that genius 'does not produce isolated or unprecedented work, but comes as a culmination of much partially successful striving on the part of others working in the same line.'⁷

We are now approaching the prevalent opinion that genius is only the ego in its higher form, a form of mentality approaching a collective consciousness. As a French authority has recently expressed it, genius is no abnormality, but a difference of degree and not of kind. An organizing intelligence, it coordinates a mass of observed facts apparently contradictory. For example, optimism may be irreconcilable with facts, pessimism with reason, yet genius harmonizes all by the higher principles of reason. The creative fancy is thus identical with genius in scientific knowledge, in forming rational hypotheses, in artistic concepts. Genius is no incomprehensible wonder, but the ego in its higher forms.⁸ Thus to make genius a form of mentality approaching a collective consciousness

⁵ 'The Story of the Mind,' p. 226.

⁶ 'Outlines of Psychology,' p. 305, New York, 1903.

⁷ 'Psychology and Culture,' p. 225, New York, 1903.

⁸ Gabriel Séailles, 'Das künstlerische Genie,' tr. by M. Borst, Leipzig, 1904. Cf. *Arch. f. Gesamte Psy.*, III., 4, p. 211.

is to follow the suggestion of Joly, of some twenty years ago, that the man of genius is for the life of his country and epoch that which the brain is to the complex organism, coordinating everything, disciplining and subordinating forces, and directing all things toward a single end, while recognizing, nevertheless, his nourishment from the infinitely minute labors and actions of the organism which he animates.⁹ This theory of genius, as Spiller has recently noticed, is largely a convenient social convention, since it enables historians to summarize the work of a period in simple way. Spiller, nevertheless, practically returns to Joly's starting-point by claiming that personal capacity mainly depends on the desire and ability to absorb and elaborate the accumulated intellectual treasures of the environment.¹⁰

The representatives of what might be called the social-contract or the storehouse theory have made the problem so very clear, as to lead one to suspect that it is not solved. Is genius no incomprehensible wonder? If it is an infinite capacity for taking pains, is this due to physical nerve force, or psychic vitality? If to the infinite capacity be added originality, whence came this unknown *X*, so lacking in other personal equations? These are some of the questions asked; the answers to them are legion. The capacity, the vitality, the originality are variously attributed to unconscious cerebration, as with Carpenter; to unconscious psychic activity, as with von Hartmann; to a subliminal consciousness, as with Myers. It might seem useless to discuss these survivals of exploded notions, except for one thing; although the given symptoms appear mystical, the attempted explanation may be rational. The characteristics of the act of inspiration are impulsiveness, intermittence and unconsciousness; but the mechanical, subconscious characteristics are here no more mysterious than in the normal psychology of association, attention, and other primitive phenomena. Taking the normalizing of function as the clue out of the mystic maze, one may make bold to enter the dim borderland of the psychic researcher. The late Frederick Myers, chief explorer of twilight psychology, postulated for genius a subliminal self. In his 'Human Personality,'¹¹ there is little attempt to explain the problem in comprehensible terms of association, attention and memory. Instead, an inspiration of genius is defined as a subliminal uprush, an emergence into ordinary consciousness of ideas matured below the surface. An American representative of this mythological school, the author of 'The Laws of Psychic Phenomena,' turns the subliminal self into a sub-

⁹ 'Psychologie des Grands Hommes,' p. 274, Paris, 1883.

¹⁰ 'The Mind of Man,' p. 417, London, 1902.

¹¹ Or 'The Survival of Bodily Death,' London, 1903.

jective self, which, as related to the ordinary, objective, every-day self, is marked by a faultless memory, perfect inductive reasoning and inconceivably rapid mentation.¹² These books are cited in indication of a popular tendency to misuse the subconscious, turning it, so to speak, into a psychological waste-basket into which are thrown the residual phenomena of hypnotism, automatism, inspirational speaking and genius itself. Such procedure arises from a confusion between the unconscious and the subconscious. Taking the latter in the sense of the marginal or what may better be designated the minimal consciousness, there is offered a legitimate instrument for the investigation of genius. Thus it has been said that thought always has its foundation in the subconscious, but in a subconscious ancillary to the conscious. The base of the subconscious is larger, its comprehension more rapid; lengthy processes are apprehended in the consciousness without running through the intermediate series of judgments leading to the conclusion. In genius there is an abbreviated reasoning, a progressive condensation of thought, originating in intuition. Yet the last stage is an irreducible minimum, the peculiar *modus operandi* of the human mind.¹³ Nazzari is here safe because merely suggestive. Elsewhere he is too dogmatic, and describes the operations of genius as if he had seen something take place in a transparent skull. The process of reasoning, he declares, appears in an instant in the mind of genius as a vague possibility, without becoming fully conscious. Later, when criticism and judgment succeed inspiration, the will intervenes and fills up the lacunæ of the psychic series.

To hypostatize the subconscious is dangerous; to create a separate entity is fatal to the abiding unity of the self. Yet to study the subconscious in the genius as a mode of the mind's functioning appears to open the most promising line of investigation. Some fresh method is demanded because the results of the recent theories of genius are so largely negative. But before suggesting that method it is necessary to summarize conclusions. (1) The pathological school makes genius a neurosis of an epileptoid nature; to it genius and insanity are but different phases of a morbid susceptibility. But, as Hirsh¹⁴ has said, genius resembles insanity only as gold might be said to resemble brass; in genius there is no necessary lack of balance in the cerebro-spinal system. (2) The physiological school says that the great masters are great workers, and that genius is a higher faculty depending upon a given physical endowment. But, as Professor Jastrow¹⁵ has pointed out, we

¹² Hudson, 'The Law of Mental Medicine,' New York, 1903.

¹³ Nazzari, *op. cit.*, p. 137.

¹⁴ 'Genie u. Eutartung,' 1894.

¹⁵ 'The Status of the Subconscious,' *Am. Jour. of Psy.*, Vol. XII.; Art. 'Genius.' Baldwin's 'Dict. of Phil. and Psy.,' New York, 1901.

are not acquainted with the neural substrate, and there are certain mysteries of endowment not open to introspective analysis. (3) The social school makes the great man the essence of the spirit of the times, the intensification of the *Zeitgeist*. Statically, he may be considered the index of the progress of society; dynamically, an initiator of change, a perturbation which masks evolution. But here, objects Professor James, the causes of production of great men lie in a sphere wholly inaccessible to the social philosopher. He must simply accept geniuses as data, just as Darwin accepts his spontaneous variations.¹⁶ (4) The subliminal school, conceiving an extra, subterranean personality, claims that below the normal ego there appears another psychic series with its own memory, imagination, sensibility. Against this view, Professor Fullerton¹⁷ holds that, although there may be a degree of consciousness when the mind contains certain systems of knowledge, which it is unconscious of possessing when in its ordinary state, yet such a consciousness is not an inner light, not a peculiar, supernormal activity.

The various theories of genius apparently lead to negation. It would seem that only a genius can comprehend a genius in soul and body, and that we must wait to infinity for the lines of psychophysical parallelism to intersect. But meanwhile it may be possible to apprehend some of the given phenomena, perhaps as normal psychoses in attenuated forms, or as neuroses in higher manifestations. The latest investigations on the borders of the minimal consciousness are here of considerable promise. Thus Professor Stratton,¹⁸ in his chapter on the evidence for unconscious ideas, has summarized actual experiments which discount psychopathic vagaries or subliminal imaginings. Referring to those masses of ideas which disappear and reappear on the threshold of consciousness, he says that the natural history of the mind need not confine itself to those occurrences which a trained introspection can report, since experimental results show us that such a view cramps the facts. One or two of these results may now be tentatively applied to an alternative explanation of genius. Taking, for example, the evidence from experiments in the discrimination of the *minimum audible* of the tuning-fork, we might say that the absolute threshold of the ordinary man is not the discriminative threshold of the genius. Or from the effect of unseen shadows on the Müller-Lyer figure it might be inferred that the artist sees what is hidden to the man in the street. Instead, then, of attributing auditory and visual hyperesthesias of

¹⁶ 'The Will to Believe,' p. 225.

¹⁷ 'A System of Metaphysics,' Chap. XXX. 'The Subconscious,' *Mind*, New York, 1904.

¹⁸ 'Experimental Psychology and Culture,' New York, 1903.

great men to neuropathic or psychopathic causes, it would be better to say that they surpass only through a higher development of healthy, normal functions. Therefore, if experimental psychology has shown that it is now possible to perceive what were not long since imperceptible mental events, it is fair to conclude that further brain processes or psychic facts may be discovered which will put much of our evidence as to genius in a new light.

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DISCUSSION

MR. JOHNSTON'S REVIEW OF 'AN ANALYSIS OF ELEMENTARY PSYCHIC PROCESS'

I HAVE read with as much care as I am capable of the criticisms of Mr. Johnston in his review of my article on 'An Analysis of Elementary Psychic Process' in the May 11 number of this JOURNAL, yet I am not quite sure that his meaning is clear to me, or that the points on which he differs are correctly apprehended. I make this statement because I am loath to believe that any one acquainted with current psychological literature is so naïve as to think that the cognitive character of our elementary psychoses is an established fact, or that it is heresy to 'suggest a point of view as to the nature of feeling' that seems to contravene the Lange-James theory of emotion. And yet if I understand correctly the critic is led to criticize just because the article disputes, on evidence, the adequacy of the intellectualistic account of the earliest forms of conscious life, and by implication points out—as Mr. Johnston thinks—a relation between feeling and certain physiological changes which 'reverses' that stated to exist by Lange and James. I confess I would be very well satisfied to be mistaken on both counts, for such criticism not only lacks novelty, but it is not pertinent to say that one is on the other side of disputed questions.

Beyond these general lines of criticism, Mr. Johnston's comments—which all point to the necessity of a cognitive view of consciousness—seem plausible because (1) he ignores one of the main—indeed the main—position of the paper; and (2) misunderstands the rest in essential respects. With regard to (1) I should like to refer to the data presented on pp. 174 f., and the interpretation on pp. 193 f. My point in these places is that perception, even of illumination as distinct from form, is *not* the most elementary experience of which we are conscious. There is *something else* which

can not be accurately described in terms of cognition just because it is not experienced as the qualification of an externally determined spatial world. This I have called feeling. As I use it, feeling is a descriptive term for a definite class of experiences which I have grouped together in one section, and, for the purposes of the discussion, there should be no need for misunderstanding what it connotes. The choice of the term for this end seems justified by current usage; it is at any rate adequate *ad hoc*. If we get away from words and theories to facts, what I deny is that you can remain true to experience and describe these feelings in terms of 'content.' They are mental experiences which, not being 'contents,' entirely escape the notice of our hard and fast structural psychologists.

Turning to (2), I may notice, to begin with, the assimilation of 'feelings' and 'intents' which is due to the critic maintaining his own—not my—point of view. It is a little surprising that so near to the origin of the 'Principles of Psychology' we should meet with such an obvious instance of the 'psychologist's fallacy.' Of course, from that point of view, if feelings are intents, and intents nothing but a particular class of contents, then feelings must be contents and consequently cognitions. But this is altogether too simple. Whatever may be the view of others, I have never identified feelings and intention. Intention, for me, is a *function*; it is a characteristic of a process—whether of feeling or of cognition—as *process* (cf. pp. 189, 190). So much at any rate is clear from the paper; but on this and other points raised in this discussion I shall hope to have something to say when I have had time to collect experimental material.

Mr. Johnston remarks that the reversal of the relation between feeling process and the involved physiological changes as stated in the Lange-James theory 'suggests that feeling is not itself connected in *any way* with sensation,' and leaves feeling to stand for 'simple vagueness.' As to the latter, I have said enough above concerning the character of feeling, and as to the former, I am not to be held responsible for the inferences of my readers when they fly in the face of what I have stated elsewhere in the paper. I have, at any rate, 'suggested' something as to the relation between feeling and sensation on p. 205.

Further, I do not use the term 'suggestion,' as my critic says, in the sense of 'associational element,' nor is his account of the function of suggestion, which he describes as 'entering in,' accurate. Association and suggestion are contrasted on the ground that the former involves an ideational element that is controlling *ante rem*, while in the latter this is not the case (pp. 191, 192). It is, as I said, the 'non-rational character' of the perceptual process that is designated by the term suggestion (p. 192). And so far from 'en-

tering in,' I stated explicitly, on the same page, that 'conscious processes develop their own suggestions.' I am also credited with deriving suggestions 'from' the 'complication of sense-data,' although I took pains to say that 'the mechanism of suggestion lies outside the limits of our inquiry,' and in the summary, from which Mr. Johnston quotes, where I say 'with the complication of sense-data, etc.' (p. 206), only a temporal relation is stated. With these corrections I still fail to see how it is possible to accurately report the earliest stages of the experiences under consideration as contents of consciousness.

In conclusion I wish to express my appreciation of Mr. Johnston's services in calling special attention to a paper which, while it deals with quite a limited field of inquiry, has in it, for me at any rate, the points of starting of many others, and I can very well understand that if it has not 'established' anything—the fates forbid we should be so near intellectual bankruptcy as that—it may serve a higher purpose in being the center, for a few minds, of an intellectual ferment.

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REVIEWS AND ABSTRACTS OF LITERATURE

Philosophy as Scientia Scientiarum and a History of Classifications of the Sciences. ROBERT FLINT. Edinburgh and London, Wm. Blackwood and Sons, 1904. Pp. x + 340.

Professor Flint is known widely as the author of two works on the philosophy of history and of several theological treatises distinctly controversial in character. The merits and defects of the work before us suggest these two lines of the author's activity. On the one hand, it denotes exhaustive research, it contains within small compass an astonishing amount of material, thoroughly reliable as to matters of fact, set forth in perfect order and with a conciseness commendable as rare in philosophical works. But, on the other hand, though dialectical skill is not infrequently exhibited, it is shown rather in keenness of distinction than in search for and criticism of basal presuppositions.

The value of the book, therefore, is largely historical; it is a work of reference, and offers perhaps little of importance in the way of logical or metaphysical discussion. But its appearance at this time has a significance of which the author is well aware, though he is none too explicit in the matter. It marks a new direction in the study and teaching of philosophy.

Comte and Spencer were at one in their desire to turn men of philosophic bent from certain studies that still are held to be the 'main prob-

lems of philosophy,' such as the nature of mind, its relation to the body, idealism and realism, knowledge and faith, and how we know we know. It is not too much to say that the normal British and American mind is heartily sick of certain of these problems as discussed. But neither Comte nor Spencer effected his purpose. If such problems are now to move from the center of the stage, they are not relegated to the lumber room of philosophical history on the ground of senselessness or insolubility; they will have a place merely coordinate with other problems, and primarily because of a restatement involving at least their partial solution. To say this, I take it, is the real significance of the first part of Professor Flint's book. Philosophy is not merely *scientia scientiarum*, he says; but, as such, it has a splendid and indispensable duty. And the second part of the book shows, as has never been shown before, the richness of material, the accumulated stores on which he who would fulfil this duty may work.

'Philosophy, thus viewed, would afford the most important guidance in education. It must be, indeed, the very basis of rational education in science.' A philosophy of science 'would lay the very corner-stone of the science of education' (pp. 21, 22). This conception, though not new to theory, is alien to practice. But it is emphatically the thing for which British philosophy has stood and which British and American philosophy may soon in a measure effect. And I suppose that this book should be viewed almost as a text-book for the study and teaching of philosophy as the science of the principles of science.

The first sixty pages deal with the divisions of philosophy. We must note here an inconsistency. On page 5 Flint says, 'philosophy, viewed as *scientia scientiarum*, is simply science which has attained to a knowledge of the unity, self consistency, and harmony of the teachings of the separate sciences.' But this task he makes later (pp. 29, 37) but one of three problems with which philosophy as *scientia scientiarum* is concerned; it is the problem, viz., of *positive* philosophy; and there remain the problems of *critical* philosophy, the 'investigation into the nature of knowledge itself'; and the problem of metaphysical philosophy, 'a theory of being and becoming.' These three constitute theoretical philosophy, or *scientia scientiarum*. Philosophy also includes the problem of *practical* philosophy, dealing with the worth of things 'in relation to one another, and to the great final end of existence' (p. 37).

Positive is a term nicely fitted and historically limited to the Comtist philosophy, and it is a misnomer for a philosophy that counts itself but a division of philosophy. It were better to identify this first division of theoretical philosophy with *scientia scientiarum*; particularly if we believe, as I think we must, that the distinctions drawn between it and critical and 'metaphysical' philosophy melt before examination. The latent purpose of the author, I take it, is to clear the philosophical field for a philosophy of science (theoretical philosophy), on the one hand, and a philosophy of history (practical philosophy), on the other.

In the two hundred and seventy-three pages of large print that follow on the history of classifications of the sciences every important classifica-

tion yet made is offered, with explanations and brief criticisms. This is the first task for philosophy as *scientia scientiarum* and as positive philosophy (p. 67). The arrangement is simply chronological. It is characteristic of the author that, while he finds something to condemn and to commend in each system, he goes almost to an extreme in avoiding any such comparison and synthesis of the several schemes as might possibly lead to a warping of his presentation of their principles and details. Seldom does he defend his criticisms; space no doubt forbids. We are told that Kant or Hegel *err*, and there is an end.

It seems at first sight a real defect that no classification of these classifications is appended, nor any positive system advanced as right, in opposition to the systems every one of which is declared, in some important feature, to be wrong. But the educational purpose of the author is only thereby made apparent. He is preparing a field for future culture, rather than gathering last season's crops.

Besides the better known classifications are included several Italian systems, and the neglected work of Ampère. Most space is given, naturally, to the systems of Plato (which, with that of Bain, he comes nearest to approving), Aristotle, Bacon, Hobbes, Hegel, Comte, Spencer and Pearson. In every case the student is put in the way of referring to the original statement of the system. Least satisfactory is the account of Hegel's system. Dr. Flint is content to leave the reader with the impression that Hegel gained his system not from study of the world, but from 'the bosom of a metaphysical philosophy.' Yet he affirms that 'to ignore the truth and grandeur of his general theory of the correlation and combination of the sciences, in critically gazing at such imperfections, must be pronounced almost as irrational as to doubt or deny the brightness of the sun, because a telescopic examination shows it to be mottled over with a number of dark spots.' Among the few cases where Dr. Flint must be accused of ignoring the real meaning of the writer is his criticism of Hobbes's description of ethics as conversant with men's passions, and of the 'science of just and unjust' as dealing with 'consequences from speech in contracting.' The most cursory examination of Hobbes's position should reveal that by ethics he here means a branch of psychology (and etymology might defend the use); while by the science of the just and unjust is meant something like the study of the formal side of the laws that be, divorced from that study of the grounds and principles of right and law that Hobbes terms politics. That is, instead of dealing in a 'strange and arbitrary way' with 'moral science,' it is obvious that he is not, as concerns these two sciences, dealing with moral science at all.

The criticism Dr. Flint makes on Aristotle's conception of philosophy raises a particularly interesting point. We may pass over his contention that 'the distinction between productive and practical sciences ought not to have the importance' Aristotle assigns it, since 'every science is both regulative of action and productive of results.' The second contention that sciences should not be classified according to their ends,

since these lie beyond the sciences to which they belong, and are nothing fixed, need not detain us; though both points are eminently fertile. The third 'defect' noted is 'the want of a philosophy inclusive of, but superior to the sciences.' Aristotle 'viewed philosophy as merely a whole, a sum made up of the sciences as a unit is made up of its component fractions. But this leaves no philosophy distinct from the sciences, and either able or entitled to coordinate and organize them.' "What Aristotle called First Philosophy and his commentators Metaphysics, does not perform this function. Its object is being as being, and so it is the antecedent and presupposition of all other sciences, . . . but it possesses a merely abstract universality, and it has no power, nor is it any part of its business to organize the various sciences into a system."

Certain features of this argument seem to me particularly unfortunate. What can be clearer than that such a science as Professor Flint desires, that should embrace all other sciences, and yet somehow be superior to them, must be preeminently abstract. On the contrary, what is more obviously concrete than Aristotle's metaphysical conclusion? The notion, too, of a science apart from, yet governing all sciences seems to require yet another science that shall govern that other superior science, or at least point out its relation to the remaining sciences. If it is denied that this science of sciences is strictly apart from the other subordinate sciences, one must answer that it is then either the whole of such sciences or one of them. That it is not the whole of the sciences Dr. Flint explicitly urges. That it is one of them is the Aristotelian contention. It is the *first* of them. To the whole he gives the name *philosophia* or *sophia*. That they constitute an organic whole is rather assumed than proven by Aristotle. It is the assumption of Platonic dialectic, and is implied, apparently, in Aristotle's treatment. The demonstration, it is true, he did not complete. He approached it from two paths, I think: in his classification of the sciences, and in his doctrine of the categories. The latter point brings us to a further objection to Dr. Flint's criticism. He says that Aristotle had no place for Logic in his scheme of sciences, that he excluded it from them. Again, however, it is stated that Aristotle regarded it specifically as an introduction to metaphysics or first philosophy (p. 80). But surely the relation was much closer than this. It would be difficult to name one chapter of the metaphysics that is not a chapter in logic, or of the analytics or the categories that is not metaphysical. And in the doctrine of the categories, in the suggestions that are made as to the relations of the several categories, as well as in the fundamental propositions laid down as to the great categories of form and matter, power and exercise, motion, end and cause or principle, here we seem to have the beginning of the proof of what is from the start assumed, that philosophy or knowledge as a whole is a system, a whole that is organic, at least in some sense of that misused term.

If a fault is to be found with the general plan of the history of the classification of the sciences, perhaps it lies in the neglect of such works

as Hume's chapter on 'Knowledge' in the Treatise, Kant's 'Transcendental Analytik' and Hegel's 'Logic.' All classifications of the sciences presuppose certain assumptions as to the relations of the categories, similar in general character to those there formulated. And inquiries along those lines must be made before the classification of the sciences can hope to get beyond the empirical stage in which, as Karl Pearson so clearly recognizes, it at present lies.

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The Content and Validity of the Causal Law. BENNO ERDMANN. *Philosophical Review*, March and May, 1905. Pp. 136-165, 290-307.

Professor Erdmann's article on the 'Content and Validity of Causal Law' in the March and May numbers of the *Philosophical Review* is an attempt to find a basis for the methodology of the sciences of fact, through an examination of the notion of causality. Modern discussions of course presuppose the synthetic character of the causal relation, as opposed to the rational analytic conception of the older 'concept' philosophy. A start then may be taken from the tradition that the uniformity of the sequence of events is a necessary presupposition of the relation between cause and effect, a uniformity given as an element of our experience. But in this there is much more involved than the sensory contents of experience. Uniformity of sequence lies not in the immediately given, but arises through the fact that in the course of repeated perceptions we apprehend through abstraction the uniformities of their temporal relation. It involves, namely, reproductive elements, and that too of uniformities of qualitative content as well as of sequence. Again, there is involved in revival the further element of recognition—an awareness of the essential identity of the present revived content with that of the previous perceptions. Finally, to relate the contents of two ideas means a process in which attention is directed to the elements of the mental content, and which leads us to identify them with one another or differentiate one from another; and this is an act of thinking, not a sensation.

But while uniformity is a *necessary* presupposition, is it also an *adequate* one? Strict empiricism must, of course, discard entirely the added terms 'invariable' and 'unconditional' which even Mill recognizes as essential. Causality can only have a problematic validity. Further, both scientific and popular thought has always regarded the relation as one, not of mere sequence, but of dynamic dependence. For this also no place is left, in terms either of will or of force. The legitimate outcome is to give up the word cause altogether, as representing nothing whatever distinctive. If, therefore, we are not to deny the causal relationship instead of explaining it, it follows that there must be contained in it, besides the elements of reproductive recognition and those of identification and discrimination, which are involved in the abstract comprehension of uniform sequence, an additional element of thought. The writer's thesis is this: Wherever two events *a* and *b* are known to follow one an-

other uniformly and immediately, there we must require with formal necessity that some element in the preceding *a* be thought of as fundamental, which will determine sufficiently *b*'s appearance or make that appearance necessary. For it is strictly impossible to think or even to imagine a chaos or absolutely irregular alternation of events, and this has, therefore, no possible meaning. Every act of reproductive recognition and attention which is involved in perception is possible only when uniformities exist. Thus the mental image of a chaos could be formed only through an extended process of ideation, which itself presupposes as active in it all that must be denied through the very nature of the image.

The necessary relation of cause and effect is thus not an empirical component of possible perception. It is a postulate of our thought grounded upon the uniformity in the sequence of events. At the same time it is not *a priori* in the rationalistic sense; it is not independent of the perceptive elements in the presupposition involved in the uniformity of sequence. The connection between each definite cause and effect is an empirically synthetic one and has as its warrant merely experience. Further, any induction is an hypothesis simply. It is hypothetical, first, because it depends upon the presupposition that the same causes will be given in the reality not yet observed as in that already observed. This expectation is warranted by no necessity of thought, not even by that involved in the relation of cause and effect; for this relation begins for future experience only when the presupposition that the same causes will be found in it is assumed as fulfilled. And, second, in the causal postulate absolutely nothing is contained regarding *what* the efficacy in the causes is, and *how* this efficacy arises.

The concept of force thus still remains indispensable, not, however, as given either in kinesthetic sensations or in the consciousness of volition, nor again as the hypostatized abstraction of the old concept philosophy, but as the imperceivable relations of dependence already present in every content of sense perception. In introducing it, moreover, we have in mind that every possible interpretation of nature possesses a dynamic character. Epistemologically the outcome is a universal phenomenological dynamism.

Two queries suggest themselves: (1) Is the absolutely relationless chaos which the argument uses the only alternative to a necessity that holds for all experience? It may be granted that without some uniformity experience would not exist. But it needs to be shown more clearly that we might not have enough uniformity to meet the psychological demands of perception, without its being necessary that each uniformity so revealed be absolute. And (2) do not the terms 'dependence,' 'dynamism,' 'efficacy,' require, to give them an intelligible meaning, a more concrete psychological content than is afforded by the bare category of thought that Erdmann postulates?

A. K. ROGERS.

JOURNALS AND NEW BOOKS

INTERNATIONAL JOURNAL OF ETHICS. April, 1905, Vol. XV., No. 3. *The Abolition of Capital Punishment* (pp. 263-286): W. J. ROBERTS. - The principle of suiting the punishment to the crime has been definitely abandoned; capital punishment exercises no greater deterrent influence than life imprisonment; it is conducive of miscarriages of justice, which in some cases are irremediable; it tends to brutalize the community. For these reasons it should be abolished. *The Moral Education of the Young among Muslims* (pp. 286-304): DUNCAN B. MACDONALD. - Muslims do not recognize ethics apart from theology. Children are taught to memorize texts which they will later come to understand. *Pascal's Wager* (pp. 305-323): ALFRED W. BENN. - Pascal's principle, which was to some extent adopted by Butler and by Newmann, is not only illogical, but mean and unworthy. *The Argument for Immortality* (pp. 323-338): A. K. ROGERS. - Passing briefly over the evidence presented by revelation and psychical research, the author points out that science does not render impossible the conception of immortality, and proceeds to justify the belief in it on the ground that it is an implication of the moral consciousness. *The Ethical Education of the Merchant* (pp. 338-352): GUSTAV. BUNZELL. - The increasing importance of commerce brings with it an increasing need for the inculcation of higher standards of integrity and a greater sense of civic responsibility among merchants. *Music and Religion* (pp. 352-361): J. W. SLAUGHTER. - Music and religion are and will always remain rivals, for they satisfy the same emotional needs. *The Scottish Church Case and its Ethical Significance* (pp. 361-369): S. H. MELLONE. - The author gives an account of the circumstances preceding the recent decision in this case, and expresses the hope that the whole matter will provide a salutary warning to churches who tie themselves down to an unamendable creed. Book Reviews—W. R. Boyce-Gibson, *A Philosophical Introduction to Ethics*: G. E. MOORE. E. H. Griggs, *Moral Education*: L. W. SPRAGUE. R. K. Gaye, *The Platonic Conception of Immortality and its Connection with the Theory of Ideas*: A. R. AINSWORTH. W. R. Inge, *Faith and Knowledge*: JAMES LINDSAY. S. F. Weston, *Principles of Justice in Taxation*: MAX WEST. W. H. Woodward, *Desiderius Erasmus, Concerning the Aim and Method of Education*: R. E. HUGHES. Leslie Stephen, *Hobbes*: G. C. RANKIN. William Boyd, *An Introduction to the Republic of Plato*: W. H. FAIRBROTHER. F. Parsons and C. F. Taylor, *Politics in New Zealand*: J. G. BROOKS.

REVUE DE METAPHYSIQUE ET DE MORALE. January, 1905. *Trois dialogues mystiques inédits. Fragments publiés avec une introduction par Jean Baruzi* (pp. 1-38). Leibniz, far from being a mere thinker, believed fervently in the identification of philosophy and life. Besides his delight in study is found a deep mysticism, though a rational one. Russell's appreciation of Leibniz fails to emphasize this. *En quête*

d'une morale positive (pp. 39-74): G. BELOT. — To-day the prevalent tendency in ethics is away from the metaphysical stage to the third or positive stage. Metaphysical systems would never have been recognized had they not imported into themselves the common morality. As against Kant, it is not the form (universality) of a deed that makes it moral, but the nature of its content. Morality can not be deduced from a rationalistic philosophy: it is an empirical science *sui generis*. *La raison et les antinomies (suite)* (pp. 75-113): F. ÉVELLIN. — Discussion and solution of the third antinomy of Kant, with the motive of showing that Kant erroneously separated necessity and freedom, which, though distinct, are never separate, but only two aspects of one and the same process. This process, a free act, is perfectly simple as such, however many aspects it may present. *Études critiques: les théories biologiques de M. René Quinton* (pp. 114-141): J. WEBER. — Exposition and criticism of the philosophic import of Quinton's law of constancy reveals its essentially teleological import. *Questions pratiques: la représentation proportionnelle* (pp. 142-152): P. LA COMBE. — M. Lachesnais does not allow for the ignorance of his readers or the opinions of opponents. We need the scientific spirit in politics. Nécrologie. Livres nouveaux. Revues et périodiques. V^e. *Congrès de psychologie*.

REVUE DE PHILOSOPHIE. April, 1905. *La vie et les œuvres de Léon Ollé-Laprune* (pp. 351-376): E. BOUTROUX. — A review of M. Ollé-Laprune's life reveals as his one constant motive the establishment of a Christian philosophy: the identity of faith, knowledge, Christianity, Catholicism and practice. *La théorie physique, son objet et sa structure* (pp. 377-399): P. DUHEM. — Scientific education should teach that physics is not, like geometry, built up once for all, but is a picture which needs continual retouching: the whole resembling reality, yet each detail by itself false. The assertion of Milhaud, Poincaré, LeRoy and others that scientific theories are definitions only is a paradox. These so-called definitions are dictated, on the whole, by fact. *Influences économiques sur les variations de la taille humaine* (pp. 400-427): A. NICEFORO. — Previous measurements of height have neglected differences of environment, age, race, hour of the day, occupation at the time, etc. Thus the inferior height of the mountaineers is due to the economic poverty of the environment. Sedimentary soil is for the same reason not conducive to height. *Revue générale: Les recherches expérimentales sur la fatigue intellectuelle* (pp. 428-448): N. VASCHIDE. — This first of a series of papers considers the work of Th. Vannod on intellectual fatigue in relation to cutaneous sensibility. Afternoon hours are more fatiguing than morning. Cerebral fatigue is usually accompanied by hypoaesthesia and hyperaesthesia. *Analyses et comptes rendus*—Gomperz, *Les penseurs de la Grèce*: A. DIÈS. Schiller, *Humanism*: H. LÉARD. Jannens, *Le néo-criticisme de Ch. Renouvier*: P. CHAINE. G. Fonsegrive, *Mariage et union libre*: T. DE VISAN. A. Bayet, *La morale scientifique*: J. DURAND. E. Demolins, *La classification sociale*: F. MENTRÉ. L'enseignement philosophique. Chronique.

REVUE PHILOSOPHIQUE. April, 1905. *La primauté logique des jugements conditionnels* (pp. 337-345): A. NAVILLE. - Only conditional judgments have indefinitely wide universality. Universal judgments should be stated in conditional form. Science affirms only the conditionally necessary: history alone predicates existence. *L'institution sociale* (pp. 346-366): ABBÉ J. MARTIN. - Liberty and right originate in society alone: authority and society are one, and come from God. Society knows but one law: its needs and aspirations. Often law has been the byword of those who would substitute tradition for these aspirations. *Essai de sociologie microbienne et cellulaire* (pp. 366-377): M. CHAMPEAUX. - There is in nature an immanent altruism: the strife of the bacteria is the condition of life. Individualism, not egotism, is nature's moral law. Thus all the noble and worthy in life is furnished by nature. *Réalisme et idéalisme dans l'art* (pp. 378-396): J. PERES. - Realism and idealism stand respectively for control and for sympathetic acceptance of fact: for free construction and patient labor. They are two necessary aspects of artistic work. *Revue critique: Les philosophies médiévales* (pp. 397-409): A. HANNEQUIN. - Review and criticism of F. Picavet's *Esquisse d'une histoire générale et comparée des philosophies médiévales*. Analyses et comptes rendus—F. le Dantec, *Les influences ancestrales*: P. BONNIER. F. Elbé, *La vie future devant la sagesse antique et la science moderne*: S. JANKELEVITCH. H. Nichols, *A Treatise of Cosmology*: A. REY. O. Liebmann, *Gedanken und Thatsachen*: G. H. LUQUET. Sigwart, *Logique*: A. REY. A. D. Sertillanges, *Les sources de la croyance en Dieu*: A. G. Molinos, *Guide spirituel*: A. G. Dubois, *Les psychonévroses et leur traitement moral*: S. JANKELEVITCH. Marie Borst, *L'éducabilité et la fidélité du témoignage*: E. BLUM. E. Durkheim et les collaborateurs, *L'Année sociologique*: G. BELOT. R. Worms, *Annales de l'institut international de sociologie*: J. DELVAILE. Ad. Wagner, *Les fondements de l'économie politique*: A. LANDRY. C. H. v. Méray, *Die Physiologie unserer Weltgeschichte*: S. JANKELEVITCH. L. Stein, *Der sociale Optimismus*: S. JANKELEVITCH. Revues des périodiques étrangers. Correspondance. Livres déposés.

ARCHIV FÜR DIE GESAMTE PSYCHOLOGIE, IV. Bd., 4 Heft. *Über das Gedächtnis für affektiv bestimmte Eindrücke* (pp. 437-458): DR. KATE GORDON. - The subjective tone, i. e., the pleasantness or unpleasantness of visual impressions, has no influence upon the exactness or accuracy of the memory of these experiences. *Bemerkungen zu vorstehender Abhandlung* (pp. 459-464): O. KÜLPE. - The fact that the feelings of pleasure and displeasure are not sufficiently differentiated to function cognitatively as reproductive motives (Reproduktionsmotive) points to their independence of the intellect and will and to a lack of variety and plurality (Mehrdimensionalität) of the feelings. *Weiteres zur 'Einfühlung'* (pp. 465-519): TH. LIPPS. - 'Esthetic sympathy' is a relation of peculiar inwardness (Innigkeit) that can not be described as an idea of the psychical associated (Mitvorstellung) with the object perceived

(as Witersek) nor, on the other hand, as 'verschmelzung' (Volkeit), but as a tendency or impulse to a very definite kind of inner relation or psychical disposition (Einstellung) experienced in the act of perception, as a single undivided psychical act. *Experimentelle Untersuchung der visuellen und akustischen Erinnerungsbilder, angestellt an Schulkindern* (pp. 520-534): R. H. PEDERSEN. — A correlation of the grades of a class of school children, who were found—by means of tests in ability to reproduce written and spoken (English) words—to be about equally divided into visual and auditory types of mental imagery, showed that the visualists excelled in writing and such subjects in which the visual element predominated, and the auditory in history and other subjects largely taught orally. Referate: *Die Grundlagen der Psychologie vom Standpunkte des Voluntarismus*, NIKOLAJ LOBKIJ. *Philosophische Probleme*, HAROLD HÖFFDING. *System des religiösen Materialismus*, H. THODEN VAN VELZEN. *Mechanismus und Organismus*, P. H. SIEWERS. *Einige Erscheinungen des binocularen Sehens*, DR. CHAS. H. JUDD. *Über den Einfluss der Dunkeladaptation auf die spezifische Farbenschwelle*, DR. MED. LOESEN. *Physiologie des Menschen*, L. LUCIANI. *Studien über den Vestibularapparat*, J. BRENER. *Die Stellung Gassendis zu Descartes*, DR. HERMANN SCHNEIDER. *Unkritische Gänge*, HANS LINDAU. *Das Duel, sein Widersinn und seine moralische Verwerflichkeit*, J. W. NAHLOWSKY. *Untersuchung über die soziale Solidarität als Princeps des Gesetzes*, CH. BRUNOT. *Theosophischer Wegweiser*, A. WEBER. *Geheimwissenschaftliche Vorträge zur Einführung in die okkulte Philosophie*, Herausgegeben von A. WEBER. *Philosophische Bibliothek*, neu herausgegeben von dem Verlag der Dürrschen Buchhandlung, Leipzig. Zeitschriftenschau.

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Rowntree, B. S. *Betting and Gambling: A National Evil*. 12mo. xii + 250 pp. \$1.60 net.

Sola, M. *Wissenschaft und Sittlichkeit*. Erfahrungen und Untersuchungen einer deutschen Aerztin. Hamburg: Hamburger Verlagsanstalt. 8vo. 2 M.

NOTES AND NEWS

PROFESSOR EDWIN TAUSCH, of Ohio University desires to secure biographical data for a psychological interpretation of theological and metaphysical theories. To that end he has sent out a circular letter from which we make the following quotations: "You will greatly oblige me if you write out such information as you can recall about those periods in your past life when you were perplexed over the purpose or meaning of your own existence, and the world about you; likewise about the times and occasions, if any, in which an old view of your relation to God and your fellowmen was confirmed, or a new prospect opened before your inner vision. If you will be kind enough to assist me in this matter I shall be glad to have you add to your narrative your age at the time of the experience, to state the circumstances that in your opinion brought on the experience, and to describe the peculiar feelings that accompanied it. Any reference to similar cases reported in literature will be highly appreciated." Those interested should send the desired information to Professor Tausch, at Athens, Ohio.

THE following changes have been made in the Department of Philosophy at the University of Wisconsin: Professor Frank Sharp, formerly associate professor, has been advanced to a full professorship; Professor E. B. McGilvary, formerly Sage professor of moral philosophy at Cornell University, has been called to a professorship of philosophy; Dr. E. L. Norton, who has been instructor during the past year, has been called to Adelbert College as instructor in philosophy.

MR. WILLIAM HARPER DAVIS, who has been instructor in philosophy and psychology at Lehigh University during the past year, has been advanced to the position of an assistant professor in charge of the department. He will also have the direction of the new psychological laboratory which was recently established at Lehigh by Professor Witmer, of the University of Pennsylvania.

ACCORDING to the *New York Evening Post*, Professor George T. Ladd has arranged to pass the latter part of next year as professor of philosophy at the Western Reserve University. At the close of the war in the East, he expects to go to Japan to lecture on Educational Methods under the Japanese Imperial Educational Society.

PROFESSOR WILLIAM JAMES, of Harvard University, will give a course of lectures at the University of Chicago during the summer session of this year.

DR. JAMES BISSELL PRATT has been appointed instructor in philosophy and psychology at Williams College.

PROFESSOR HUGO MÜNSTERBERG, of Harvard University, sailed for Germany on June 1.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE CONCEPT OF TIME¹

I HAVE been asked to say a few words by way of exposition of a theory of time, which I have been bold enough to advance in a recent monograph entitled 'Time and Reality,' published by the *Psychological Review*. You know with what reluctance a man does anything of this kind, but I have taken this opportunity to clarify if possible some misunderstandings, and principally to afford a target for discussion. At most this paper must be regarded as a supplement to the monograph mentioned above, not a restatement.

The epistemological and metaphysical importance of the concepts of time and space was first clearly seen by Kant; and with him, as we well know, the difficulties encountered in the traditional treatment of these concepts became the signal for a change of front in epistemological and metaphysical discussion. Little has been done in clarifying those concepts after Kant, until within comparatively recent years. Thanks to the philosophical mathematicians such as Riemann, Klein, Poincaré, etc., the concept of space has emerged from the realm of mythology to an important place in the logic of definition. The concept of time, however, has in the meantime received very little metaphysical consideration beyond repeating the theses of Kant. This is owing, no doubt, in part to the difficulty of the concept, in part to its seeming lack of opportunity for logical elaboration. I can not help feeling, however, that both epistemologically and metaphysically time is the more important concept of the two, however great may be the opportunity offered by the space concept for logical pyrotechnics.

Whether we regard space as subjective or objective, we all agree now that space must be such as to make no difference to contents in space. It enables us to spread these contents out, and herein lies its convenience, but it makes no intrinsic difference to the facts thus

¹ Paper read before the Western Philosophical Association, April 21, 1905, at Lincoln, Neb., with some additions growing out of the excellent discussion of the previously published monograph by Professors Hinmann and Lovejoy at the above meeting.

spread out. Free mobility is one of the few axioms that critical geometry has left standing. Logically, therefore, we can easily abstract from space. But not so with time. Whatever theory we may hold as regards time, it must be admitted that time alters our contents, makes an intrinsic and not merely an external difference. So far from the axiom of free mobility being applicable to time, consciousness, in so far as time pertains to it, is by all agreed to be irreversible. Contents are less vivid and distinct, assume different values and, above all, bear a different functional relation to the present subject. This has made even those who regard time, with Kant, as subjective speak of it as an irreversible series, though, as I have tried to show in the essay referred to, irreversible is applicable only to process, not to series. How a subjective form can be irreversible passes understanding.

Leaving out all dialectic subtleties, let us try to define the fundamental character of time. The difficulties besetting one's path on such a quest are due in part to the confused character of the concept as we find it in common-sense thinking, but still more to the idols of the philosophic tribe. From Zeno down to Bradley it has been taken for granted that time is serial in nature, and the arguments for and against its reality have always assumed this serial character. Assuming time as an order series, Kant was the first one to show that time must be subjective. That he also regarded it as irreversible and as a condition of moral activity does more credit to his insight than to his consistency. Since Kant idealism, using the Kantian weapons, has made short work of a serial real time. I agree entirely with the Kantians that if time is serial it must be regarded as a subjective or ideal construction. But I also hold that philosophy has emphasized the wrong aspect of the somewhat ambiguous common-sense concept. The flying, fleeting, evanescent character of experience, it seems to me, is the primary character of time. The serial character is secondary, and is the result of a *posteriori* construction necessitated by the real time character. We construct past and future because our contents *have* the time character, because they are forever going and coming; contents do not come and go, arise and fade, because of our series.

To discover what time is we must discover the differentia of time. We must get over our intellectual slovenliness in simply dumping things together. This is especially true of time. We have been too prone to be satisfied when we have reduced it to one dimension of space, to number, to quantity, to causality, to will, and what not, if, indeed, we have gotten beyond identifying it with the stream of consciousness as a whole. No doubt the time concept has important relations to all of these concepts. But these rela-

tions are obscured by the neglect of differences which fail to give the time concept any assignable significance. Such obscurity makes time as a logical tool for describing experience worse than useless. If the time concept makes no difference to experience let us drop it out altogether. Using the pragmatic test, then, which I applied ignorantly some years ago, let us see what difference time makes to experience.

Do you say that time is a series? Then by what mark is time as a series differentiated from all other series concepts? To illustrate by another concept, more familiar: If you say, for example, that space is a complex of series, you have at most only mentioned the genus. This would not differentiate it from color and taste series. If you say with Riemann that space is a manifold, you have again furnished only a large genus. I am taking for granted that you will try to talk sense and not simply reply in a lazy way that space is very complex and includes everything, as some of my critics have said of time. Obviously what differentiates space from the mere series concepts or mere group concepts is that space is an ideal construction of *extensive* data or is an *extensive* manifold. Extensivity is thus the character that differentiates space from other concepts of the kind referred to. If we return now to time as serial, we must here, too, discover precisely what difference it makes as a concept, what marks it as distinct from other series concepts. The answer you get when you ask: What sort of a series is a time series? is something like the answer of a friend when you ask him: When are you going to Chicago? and he replies: Who says I am going to Chicago? Or the answer in algebra to the question: What positive quantity results from adding 4 and -8 ? and you get the answer -4 . The answer here shows that the question involved a wrong presumption. Well, so with the answer to the question: What are the differentia of a time series? The answer is: A time series is a series in which contents keep passing out and coming in and in which no position can be defined with reference to any other position, because every position is shifting in value with reference to every other. In so far, in other words, as you want to have a series with definite positions, in so far you must ignore the time character of experience. In so far, again, as you let in time, your serial construction fails to define. The answer to the question: What sort of a series is time? seems to be that time can not be expressed as series at all.

We have said that the test of the nature of time must be the difference it makes to experience. The term experience, however, must be narrowed down for logical purposes. I believe that there are several types of experience and that reflective experience is only

one out of these, no more real than the others. But what we are concerned with here is only reflective or judging experience. The question then is: What difference does time make to our judging experience and to other forms as reported to this? Evidently time bears a peculiar relation to the law of contradiction. The law of contradiction is only applicable, as a matter of fact, if you exclude time. The law of contradiction says that different judgments can not be made with reference to the same point in our space system and in the same respect. But that an object can be white and, where it is white, be not-white; that a thing can both be and not be in the same place—are matters of every-day experience. A timeless universe would break down under its own contradictions. Time, then, is that aspect of experience which makes it both possible and necessary to make different judgments with reference to the same point in reality and with reference to the same attribute or within the same universe of discourse, *i. e.*, to judge that reality is both white and not-white, warm and not-warm with reference to the same point of space. Here the law of contradiction is not violated. It simply finds a new dimension by means of which incompatible judgments can occupy the same space without proving destructive.

The so-called law of universality proves equally an abstraction. Once true always true could only hold in a timeless universe or by abstracting from time. Experience shows too clearly that neither facts nor meanings have much stability. All *our* world is capable of is such relative universality and uniformity as enables us to come in a fair way toward agreement and anticipate for practical ends the processes of nature. Thus the relative and instrumental nature of knowledge becomes evident. It must not be forgotten, however, that knowledge is not something external to conscious process, but a tool of its own devising for the furtherance of its own ends.

What I have tried to show is that time does make a difference, and that the difference it makes is that we must revise our judgments or make new judgments in order to meet the requirements of experience. If time made no difference, if experience could be described as well without it, then we should have one eternal moment of reality with a timeless scale of values. Once seeming true would be always seeming true in such a world.

I have been criticized for speaking of the character of time as a negative character. It has been pointed out that what time *does* is something positive. It is responsible for passing away and novelty, it makes necessary new judgments of reality. All that is very true. And that leads me to point out that time bears a different relation to knowledge from that of any other character of reality. Terms and the concepts they stand for indicate contents abstracted

from the concrete context of experience. But the positive contents of experience, whether qualities or relations, have a *place* within experience; they are something as it were on their own account and can be set off from other contents, or pointed to. Blue is not only describable as different from other contents or like other contents, but can be indicated as a positive blue fact as well. But not so with time. Time is known only through its other. If we say fleeting or passing we must think of fleeting values, not of fleeting time. It is the instability of all our facts and values that makes us suspect the presence of the time character. The evidence for it is thus altogether indirect, *i. e.*, in the difference it makes to our meanings. To try to point to the time character as we point to blue or red would be like the schoolmaster's saying: I see some boys that are not here. Time knows no proximate genus under which it can be subsumed as space, for example, under the concept of series or 'manifold.' The only universe of discourse that can be framed for it is reality or the process of experience as dichotomized, on the one hand, into being, the world of positive facts and values, which can be held apart from their context, indicated or pointed to as well as described in terms of their other; and on the other hand, into non-being, the negation of being, the transmutation of facts and values. In the process of experience being and time are thus inseparably locked into one Hegelian, Kilkenny-cat embrace. This ought to satisfy even the most voracious Hegelian appetite for opposition. But there is nothing mystical about the time character. To thus negate our meanings, to make our judgments false and so to make new judgments necessary is precisely its character. I have spoken of time as non-being, not because I regard it as unreal, but because it negates that which is. If we were to find a cold, logical equivalent for the warm transitivity of our immediate experience we should be obliged to call it the non-identity-of-what-is character. That is a very cumbersome adjective, but that is what it *does*.

But inasmuch as negation is never negation of itself, but is always transmutation, and therefore novelty, therefore time *process*, though not the time concept, is a very positive and very rich affair. Process is the bearer of all reality and contains within itself the prophecy of new reality. And when process is conscious of itself, of its own meaning, we call it activity or will.

Accounting for transmutation as due to the time character may be regarded as a lazy way of getting rid of the responsibility of accounting for the changes or sequences in our experiences. Not so. Transmutation in general does not account for any particular transmutation. The fact that physics has assumed motion as a

property of bodies has not saved it from the responsibility of investigating the laws of motion and describing the particular sequences. That time is a property of reality simply means that facts are unstable, but *how* facts shall be transmuted, the quality and rate of transmutation, must be explained by their own structure and their place within the system of facts. The concept of change in general stands in the same relation to the particular changes that the demand for law in general stands to the particular laws or connections.

The term absolute as I have used it has caused no small deal of trouble. I have defined the time character as absolute non-being in order to differentiate it from the negative judgment as ordinarily employed. The latter has reference to contrasting being with being. The time character does not have to do with the fact that there are coexisting differences or that we must now make different judgments in regard to reality. Rather the time character infects all being; it has to do with difference that creeps in at the same point and everywhere. It is a property of all reality; not only an adjectival content of all reflective experience, but of reality whether it is reflective or whether it is a lower grade of experience, *even* when, perhaps, in its own right it can not be characterized as experience, because it makes such a difference to all forms of reality for *us* that we must make different judgments of what would be the same. By absolute, therefore, I simply mean that time is a real property of our experience-world, subjective and objective, and not a derivative of being in any form, as the Hegelians would have it. It is irreducible, as red and sweet are irreducible qualities of experience; but, while these are specific contents which can be marked off and indicated, the time character is a generic adjective, a property of all reality. It is the seed of instability that must be conceived, not to account for any particular motion, change, or variation, but for motion or change at all. The particular transmutations or changes must be accounted for by the character of the existing system of being, given this all-pervasive property of time.

I have tried thus to give the concept of time a very specific and technical meaning in our logic of experience. Not that I have been arbitrary in this. On the contrary I have tried to unravel the character time has in the common consciousness of man, confused though that consciousness be. It is also the character which we need in order to make our description of experience consistent and complete. We can thus produce conceptual continuity and flow in the previously static and discontinuous categories of our logic—thus make the wheels of experience go round in thought as they do in fact. While our logical system can in no wise be a substitute

for the warm and concrete process of experience, it ought to furnish a complete symbolism for concrete experience.

I have two quarrels with idealistic theories so far. One is that even though reality for us must be thought of as experience stuff, yet all experience is not reflective, and can not therefore be reduced to the conceptual type or to purposive definition. Concepts in relation to a large part of experience retain an instrumental or tool character. They are, with reference to non-reflective experience, merely symbolic equivalents in the service of the willing, purposive moment. But my other quarrel is that the ontological conceptualists have failed to make their conceptual scheme exhaustive. Hegelian dialectic at best keeps jumping on one leg in its attempt at a static scheme of reality. Its non-being is not differentiated from being. But we need the negative concept as well as the positive. The relativity of meanings is as obvious a fact as that we have meanings. This relativity of transmutation, however, can not be exhausted *a priori*, but is the character of experience as ascertained *a posteriori* through the very failure of our meanings to express what they mean to express, the nature of the facts. Not one system of meanings, but ever new systems of meanings are required in our world. Thus reality as concrete out-Hegels Hegel and makes ghosts out of our logical absolutes.

I know some people have a violent antipathy for everything abstract, and they are right that we must not mistake abstractions for realities. But without abstraction and conceptual construction we should have no science or philosophy. We should simply live in the immediate moment. Truth, or conceptual analysis and construction, is the means through which the concrete willing ego strives after greater completeness of insight and appreciation. It is this concrete and active self which constructs the past and future to symbolize its own conditions of activity as a time subject. It is this concrete self which is conscious of *direction*, because it is conscious of purpose; to which the data and habits of the now are only a means toward realization of demands for unity and wholeness; for which, therefore, the death of the old meanings means the birth of new meanings better expressive of its concrete life. In this willing, purposive, conscious ego, not in abstract systems of categories, lies the principle of negativity through which the ego is ever transcending the old meanings and ever reconstructing itself in terms of new meanings and systems.

Reality in the concrete, as we take account of it in our reflective moments, is a willing process. I do not see, however, how we can regard time itself as an attitude on the part of the will. I do not see how we can be said to will what we do not now will or intend

what we do not now intend. The new meaning, however minutely we may analyze the conditions of its appearance, must be looked at as a gift; it is not made simply out of the whole cloth of the old. It can not be predicted therefore. It can be known only *a posteriori*. For this new meaning the past is no longer except as it has been transmuted and lives in the present meaning, as looked at from its point of view. In it is the hope of the future which can only come through the death of the present, 'when we dead awaken.'

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SELF AND NOT-SELF IN PRIMITIVE EXPERIENCE¹

IN our earlier and cruder experiences there is no clear-cut distinction of self and not-self, and hence no definite consciousness of the boundary-limits and the relations of these two constant factors in human experience. The child's earliest consciousness is void of any well-defined sense of self or not-self. The materials which will later supply the basis for a distinction between these two poles of experience are present in *feeling* or *sentience*, but have not yet been differentiated and compared. On the one hand there are the warm and vivid feelings of the organism, *i. e.*, vague uneasiness, appetites, pains, satisfactions, etc. On the other hand there is a dim and growing sense of extra-organic factors in their relations to the vital organic feelings. The primitive self's first vague idea of itself is framed in terms of its organic needs, and its first idea of the not-self is simply that of a means or hindrance to organic satisfactions. The first felt self is stomachic. This basis of distinction and relation between self and not-self does not wholly vanish in adult life, and some adults never get very much beyond it. They remain sunk in sensuous appetites. They oscillate between organic desires and satisfactions.

Experience thus begins without any reflective consciousness of either the distinction or the relation between self and not-self. The latter is first known in an immediate reaction or experience of the self as organic and appetitive. Knowledge has its roots in a state of *psychical immediacy* in which self and not-self meet and blend.

The most rudimentary judgments, *viz.*, those involved in the simplest state of sentient experience, are the direct contact-points of self and not-self. When the child or the savage exclaims, 'It is hot,' 'It is cold,' 'It tastes good,' or even when he makes such a simple exclamation as 'Ugh,' he affirms his own pleasurable or

¹ Considerations introductory to epistemology.

painful organic state in relation to a state or occurrence in the not-self. And in these simplest qualitative *judgments* we have at once the very first beginnings of knowledge and the germs of all its later developments. For we have, even at this point, not an absolute datum of knowledge passively received by the self, not a raw fact thrown into the mind from without. It is impossible by any reach of psychological analysis to get down to an absolute rudiment of knowledge—a purely given datum of raw ‘unmentalized’ experience—in whose constitution the self has not participated. The very first stage of psychical immediacy in experience involves the *reaction* of the self to a stimulus. And our so-called simplest datum of sense, perception, is the result of a judgment or reaction of the self in which the latter relates its own state in some vague indefinite fashion to the not-self. If we were to begin with the wholly gratuitous assumption that the first step toward knowledge must consist in the intrusion into consciousness of a rudimentary datum wholly unaffected by the self’s intellectual activity and coming from a not-self wholly disparate in kind from the self, we should thereby make it impossible to take a single step towards understanding the development of knowledge. Moreover, we should be setting up a hypothetical atomic datum of mind which has no foundation in experience. We must begin with self and not-self as mutually involved factors in a common experience. *Now the conditions of that immediate experience or simple judgment of sentience in which self and not-self are found together can not be determined at the outset of an epistemological inquiry.* At present we can only note and emphasize the fact that knowledge begins in a simple judgment of immediate experience—a judgment of feeling or sentience as yet devoid of explicit conceptual relations, but involving both self and not-self, and therefore containing the germs of conception and all other functions of thought.

The immediacy and unreflectiveness of the earlier mental processes in thought may be illustrated by that prevailing philosophy to which Mr. Tylor has given the name of *Animism*. In the mental attitude represented by this view it is the immediate and unreflective character of the relation between self and not-self which leads the savage to attribute life and sentience to inanimate objects as well as to trees, plants and animals. Struck by some phenomenon of shape or movement apparently analogous to those shown by men or animals, he immediately refers his own general conscious state in a vague fashion to the objects concerned. He spontaneously *ejects* his sentient selfhood into them. It would be the first business of epistemology, in giving an account of knowledge, to trace the rise of the principal forms of reflective thought out of this immediate

psychical life, to inquire how discursive knowledge becomes interposed as a third term between the immediately felt soul-life and the world of the not-self, and how, through discursive thinking, the primitive and apparently homogeneous immediate experience of the sentient self becomes differentiated and organized.

The first impulse towards reflection arises from the shock caused by a felt discrepancy between those elementary desires of the self which tend to issue directly in impulsive activities, and the incoming experiences of pain, disappointment, etc., resulting from a failure of these impulses to bring the satisfaction desired. The impatience of hunger may lead the hunter to seek his quarry incautiously and to lose it. The discrepancy between desire and fulfillment makes necessary the *inhibition* of some of the primitive impulses. The self must hold desire in leash until some measure can be taken of that part of experience which signifies disappointment and the balking of the self's impulses and so arrests attention and compels thought. It is first in this sort of experience that conscious *attention* can properly be said to come into play. The child impulsively grasps the candle. The resultant pain compels the concentration of attention on the nature of the object. And *attention* to an experience means *retention*. The earliest thought, then, is directed predominantly towards the world of the not-self. This is the first object of sustained inquiry. The first practical need is to get adjusted to that objective existence (not yet known as an *order*) which so conditions and interferes with the satisfaction of the felt needs of the self. The primitive idea of nature is the product of hunger and fear stimulating the self to reflection as well as to action. And so, too, cosmology and physics, the sciences of the objective order, precede psychology and ethics, the sciences of the subjective order, in the development of systematic thought. And cosmogonic myths and stories of descent from animistic nature-powers antedate history.

Experience is a wider term than *knowledge*. The term experience expresses the unity of all conscious content, the presence in consciousness of every process and relation which belongs to the self as a living unity functioning in immediate feeling, in sensuous perception, in reflective thought, in impulsive action, in deliberate volition, in emotion and sentiment. Knowledge is a differentiated and highly organized form of experience. Whether all experience must submit to this organizing process remains to be seen. What concerns us now is that the organizing process of thought, which constitutes knowledge in all its stages from its rudimentary practical beginnings up to its most highly abstract forms in science and philosophy, must go on *within* experiencing centers or selves.

Wherever we may fetch up, we must at least begin with the principle that the *esse* of things for human thought appears to be their *percipi*. There may ultimately prove to be more in the being of things than their being for a human self, but this *more*, to be legitimately grounded, must be established in relation to the being of things for a consciousness; *i. e.*, we must use experience to transcend experience. And experience means primarily presence to a conscious self.

Experience is from the outset a totality involving both subject and object. At first this totality is of a felt and implicit character. Distinctions must be developed in it for thought before the ego and the non-ego can be brought into explicit relations with one another and the totality to which they belong be made articulate. The child *feels itself* in a vague world, but the educated man *knows* himself reflectively in distinction from, and in relation to (these are two sides of the same thing) a world which has for him an organized and articulated character. At first, then, the distinction between self and not-self is not clearly drawn. For the naïve consciousness, knowledge of the world is quite as immediate and direct as knowledge of the self, and, indeed, the former knowledge bulks larger, seems clearer and more direct. The sharp antithesis between the self and the world is the product of reflection on an experience which is at the outset only vaguely and spontaneously recognized as *trans-subjective*. The not-self represents at this early stage simply the self's practically determined judgments that things have an activity independent of the self. The self *must* recognize a not-self and qualify the latter with some elements of its own experience. The problem of the objective validity of knowledge is decidedly a product of sophistication, of a reflective thinking, which, beginning in the clash and contradictions of experiences, is necessitated to work itself out to the bitter end. Moreover, rightly understood, this problem is at the outset simply the question of formulating the relations of certain specific experiences within the whole of experience, *viz.*, the relations between that group of experiences which is suffused with the peculiar warmth and intimacy which leads me to call it my own, and the more colorless and impersonal fringe or periphery of experience. It may be that, in working out these relationships of the self and not-self, we shall be led beyond experience to its implications in a region which is not immediately given or experienced. But we must not pass beyond experience unless the growing rationality of the latter authorizes us to cross its boundaries in the very interests of its own rationality.

There remains to be noted here one important feature of human experience. As soon as knowledge begins to be clearly formulated (in the conception of *order*, *causal relations*, etc.), and an objective

world is distinctly recognized or judged to exist in distinction from the experiencing subject, this world is regarded as one which must exist for *all* thinking subjects. In other words, as soon as the self learns to distinguish between itself, other selves and an external world it recognizes that there must be a *common* or *universal* element in the experiences of different selves. And in the very first act of cognition the self implicitly makes the judgment of referring a part of its own experience to this world of a common experience which is conceived as accessible to other selves, *i. e.*, as a *social* world of experience. The significance of this fundamental principle of cognition would demand separate consideration.

This common or universal quality of judgment is embodied in the *concept*, and hence conceptual knowledge is knowledge communicable and valid for all. The concept or general notion is not antecedent to judgment. The concept is a synthesis of particular judgments, *e. g.*, the concept of a candle as that which gives forth light, heat, etc., of an orange as that which feels round, has a sweetish acid taste, yellowish color, etc. The formation of these concepts would not be possible if there were not a universal quality or relation in the most particular judgments. Analysis extracts the universal relation from the several particular judgments, and synthesis unites them to form a concept. The concept is the expression and resultant of judgments and the latter involve both analysis and synthesis.² The definition and organization of our every-day judgments in their relations to one another is the definition and organization of experience into a system of knowledge, and the unity of knowledge is implicit in the growth of experience from the outset. Judgment may be compared in this respect with *will*. At first the whole self judges or reacts vaguely and more or less at random, just as it wills at first without clear direction towards the end desired. The definition and organization of judgment in the progress of knowledge is like the growth in definiteness of purpose and mastery of means to its fulfillment, which characterizes the increase in efficiency and self-control of the human will.³ We judge reality from a single and vague standpoint and imply the connections of the single judgment in a system. We will a single end and imply the system connected with this single act of will. In other words, from the very beginning of our *cognitive* life we *assume* the rationality of our world as experienced.

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² J. E. Creighton, 'Introductory Logic,' Chapters 20 and 21. G. F. Stout, 'Manual of Psychology,' Book 4, Chapter 4.

³ B. Bosanquet, 'Essentials of Logic,' Section 2.

SOCIETIES

FIFTH ANNUAL MEETING OF THE WESTERN PHILOSOPHICAL ASSOCIATION

THE Western Philosophical Association held its fifth annual meeting on Friday and Saturday, April 21 and 22, at the University of Nebraska, Lincoln. Five regular sessions were held, besides several happily arranged social gatherings for which the association was indebted to the hospitality of the faculty of the philosophical and psychological departments of the University of Nebraska. Seventeen members were in attendance. Pains having been taken not to overcrowd the program with formal papers, it was possible, in such a relatively small gathering of specialists, to have a full, vigorous and fairly general discussion of nearly all the topics presented, and to get the stimulating effect of genuine philosophical debate. The address of the retiring president on 'Psychology and Education' was delivered on Friday evening at a largely attended public session.⁸ At the business session, it was voted that the regular meetings continue to be held during or near the time of the Easter recess; this will prevent the association from joining, in its collective capacity, in the proposed meetings at Cambridge next winter. Invitations for the next meeting were received from the University of Kansas and from Washington University; the selection of a place was left to the executive committee. Six new members were elected: Mr. H. G. Campbell, Professor C. W. Fordyce, Professor Frank P. Graves, Professor A. E. Monin, Professor J. L. Merriam, Professor J. D. Stoops. Officers for the next year were elected as follows: President, Professor J. H. Tufts; vice-president, Professor F. C. French; secretary-treasurer, Professor A. O. Lovejoy; additional members of the executive committee, Professor W. B. Pillsbury, Professor A. Ross Hill. Abstracts of papers are appended.

ARTHUR O. LOVEJOY,
Secretary.

The Concept of Time: JOHN E. BOODIN.

Kant was the first philosopher to see the epistemological importance of time and space. Time, however, while less amenable to logical pyrotechnics than space, is epistemologically more fundamental, because while contents in space are reversible or interchangeable, which means that space does not affect them intrinsically, time makes it impossible to take our contents more than once or makes a difference to the contents themselves. To define time means precisely to show what that difference is. To define a concept, namely, is to give its genus and differentia. In the case

of space, for example, series or manifold may be regarded as the genus, in which case extensive series or extensive manifold would mark space off from other series concepts. But what about time? If we consider time as a series, what are its differentiae? The answer would be: The time series is a series in which contents keep passing out and coming in and in which no position can be defined with reference to any other position, because every position is shifting in value with reference to every other. But this is to contradict the fundamental nature of the series concept. Series, then, is not the proximate genus of time. The only universe of discourse we can have for a definition of time is experience or reality. Time is that aspect of experience which makes it both possible and necessary to make different judgments with reference to the same point of reality and with reference to the same attribute or within the same universe of discourse. It thus saves the law of contradiction by furnishing a new dimension by means of which incompatible judgments can occupy the same space without destroying each other. Time, unlike the positive characters of reality, can only be defined through its other; it can not be pointed to. But the peculiar transformation of that other is due to its individual character and its place in the system of positive values. Time is an absolute property in the sense that it is ultimately real, *i. e.*, can not be derived from any form of positive being. It, on the contrary, makes all positive being relative.

Time as an Absolute Principle of Negativity: E. L. HINMAN.

This paper, prepared to open a discussion of Professor Boodin's monograph on 'Time and Reality,' criticized the argument of the monograph from the standpoint of absolute idealism. Four main points were urged. In the first place, any attempt to define time presupposes that time is a member within a larger whole, and is relative to a principle or system which transcends time. The conditions of the logic of definition, then, render futile any effort to define time as an ultimate principle which conditions everything, and the effort leads and must lead to a hollow and empty result. In the second place, the logic by which the monograph infers the ultimateness of time might be used with at least equal cogency in the contrary direction; with greater cogency, if we take account of the fact that the timeless must be admitted in some form in any case. In the third place, the central principle of absolute idealism, the ontological significance of the concept, is the vitalizing principle of the entire argument, and should be followed to its conclusion, but is not consistently worked out. In the fourth place, the author of the monograph, shunning the logical development of

absolute idealism, has hypostatized absolute non-being. The result is a conception contradictory in itself, and bearing the germs of impossible logical demands.

The Category of the Unknowable: DAVID F. SWENSON.

The unknowable is an important concept, which in some form or other has engaged the attention of most medieval and modern philosophers. The doctrine of H. Spencer is an adaptation of Sir W. Hamilton's position, and this in its turn goes back to Kant for its primary impulse. It is in Hamilton also intimately connected with a distinction between knowledge and belief which was first clearly laid down by Aristotle. The concept of the unknown covers that of the unknowable, but is not identical with it. All that is unknowable is unknown, but not all that is unknown is unknowable. The unknowable is the concept of the unknown pushed to its absolute limit. The unknown is a category having significance for both theory and practice. In each realm, however, the significance is a different one, immediately at least, if not ultimately. In the field of theoretical knowledge it means that science is progressive, not stationary. Since knowledge is essentially systematic, it also means that accepted theory must always be held subject to modification and reorganization. As long as there is anything unknown, every science which does not abstract from its relation to the reality which unfolds itself in space and time (excepting such sciences as have no other relation to concrete reality than that involved in the derivation of their presuppositions from experience), must remain hypothetical in nature, not necessarily in respect of the individual facts on which it rests, but in respect of its interpretations, and ultimate concrete organization. Such sciences being hypothetical, the only test of validity actually applicable to them is workableness, including in that term ease and economy of thought. And as long as there is anything unknown or unfinished, a synthetic philosophy which shall systematically embrace the whole of reality, is rendered impossible. The unknowable is that which can not be known. Knowledge of the unknowable would involve self-transcendence. When knowledge is looked upon as a transforming rather than as a revealing function, the object of knowledge becomes an unknowable 'Ding-an-sich.' As so conceived it is without significance. There is a confusion of thought in identifying such an object with the sensory stimulus, which is of course either known or knowable. In Herbert Spencer the unknowable is, among other things, that which can not be intuitively represented in thought with absolute completeness. Not only the concepts mentioned by him, but every individual object as such, is in this sense unknowable. Every totality involves the

infinite. Every object involves in itself an infinity of possible sensible experiences, and involves, in its relations, an infinity of possible and actual connections with other objects. We can thus never know what an object is all in all; that would indeed be to know 'what God and man is.' The totality of an individual object as such, as well as the totality of things as actual, exists only for the will. We apprehend reality in belief. Knowledge is the instrument by means of which the will comes into intelligent relation with external reality. Knowledge is of what a thing is; belief, that it is. This is parallel to the old Aristotelian distinctions: *ὅτι ἐστὶ* — *διότι ἐστὶ*; *πρῶται οὐσίαι* — *δεύτεραι οὐσίαι*; form with matter—form without matter.

The Relation of Psychology to the Philosophy of Religion: F. C. FRENCH.

As physics brings all unusual and apparently abnormal phenomena of nature under natural law, so modern psychology brings all abnormal mental phenomena (hallucinations, trances, etc.) under the ordinary normal laws of our psychophysical life. The doctrine of the subliminal self in psychology plays much the same part as the theory of potential energy, or the invisible ether in physics. As Professor James points out in his 'Varieties of Religious Experience,' by means of the subliminal self the psychologist can explain sudden conversions, celestial visions and mystic ecstasies. The subject of such experiences, coming as they do from the hidden region of the subconscious, very naturally ascribes them to a supernatural source. The old psychology was compelled either to deny the very fact of these experiences or to accept the supernatural inference. Modern psychology accepts these experiences as subjective facts, but denies their ontological significance. Professor James departs from the standpoint of science when he suggests that these phenomena of the religious consciousness may be doorways into the spiritual world. Whatever metaphysics or epistemology may say of such a view, psychology as a science must regard these religious experiences as purely phenomenal. It does not find in them any manifestation of the transcendent, although their possessors often so interpret them. Science is as rigorously phenomenalistic in the mental sphere as in the physical sphere. For the scientific mind there is no more possibility of a subjective miracle than of an objective miracle. Many religiously minded people have been led by the physical sciences to give up the notion of supernatural manifestations in nature, but have still regarded certain religious experiences as having a transcendent value. This raises for the philosophy of religion the problem: if the mental realm

be as phenomenal as the physical, have we any ground for a belief in the transcendent? The answer in brief is that we have no perceptual evidence of the transcendent either in the physical or in the mental realm, but the fact that our experience, both outer and inner, is intelligible, subject to law and to scientific interpretation, is the best evidence that our world is the work of mind. We do not see the transcendent through gaps in the empirical; we know the transcendent through the very rationality of the empirical. This line of thought, of course, has nothing to do with the psychological causes of religious belief, but simply with the philosophical justification of such a belief.

The Esthetic Attitude: ROBERT MORRIS OGDEN.

The esthetic attitude is a state of contemplation distinguishable by its conformity. Affection is a certain aspect of the total conscious state and, as referred to an object or group of objects within the complex, is expressed by a conformity or non-conformity of this to the whole. Aside from the attentive apperceptive state which is uppermost, one must take into consideration 'subconscious' functionings of the *Bewusstseinslage* which are important in determining this conformity or non-conformity. Pleasure is an expression for active healthy functioning of the organism. It is also an expression for a conformable mental whole in which neither active physical nor mental processes having a definite purpose strike the dominant note. An objectifying and justification of the concrete state itself characterize this esthetic pleasure. Art has its significance in providing objects which arouse conformable mental states of this sort. But the esthetic attitude is not limited to works of art. It may be adopted toward any situation in life, and therein rests its great significance to the thinking man. It depends, then, in its broadest scope, on a certain clear, sane world-view which sublimates all. It thus detects the ideal essence in all, the logic to every situation. Thus it is that even sorrow and pain, which as active functionings are unpleasant processes, possess, no less, esthetic elements which, when made dominant, bring peace and calm and have an elevating intent. There is no esthetic displeasure, properly speaking. The esthetic means conformity, and non-conformity always prompts desire for action or thought-process, which in its nature is unesthetic. The ugly in art finds its justification as a motive for a certain quality of affection which the genius of the artist raises above its practical distasteful significance into the realm of the esthetic. Esthetic objects may be of three sorts: (1) sensation complexes, a low order because lacking in fullness and permanent interest; (2) humorous situations conformable in their mere natures because all

earnest and purposeful intent has been extraneously removed; and (3) any complex from which one can derive a complete and ideal satisfaction without further desire or purpose.

The Meaning of Right: F. C. SHARP.

The assumption upon which this paper rests is that approbation and disapprobation are the ultimate source of moral distinctions. Its problem is a determination of the meaning of the words right and wrong in accordance with this assumption. On this view right would mean generically the approved, but it applies to but one of the many things that are objects of approbation. Right is a term which I apply only to volitions, and only to such volitions as I approve of every one having under the given conditions. A consideration of three obvious objections to this view will make the position clearer. It will be urged that there are judgments of propriety and decency which are not moral judgments, which nevertheless seem to fall under our definition. But it is denied that they do so, on the ground that they are judgments not upon what the person aims to do, but upon a by-product of his aim or purpose. It will be further objected that our fundamental assumption makes moral distinctions purely subjective. It is admitted that this objection would be a serious one if substantiated; but it is claimed that the right, objectively considered, is not that which any one whatever chances to approve, but is the approval of a completely developed man, acquainted with all the relevant facts of the situation. Finally it will seem to many that our definition omits the fundamental ethical category, that of obligation. The attempt is made to meet this objection by showing that the feeling of obligation is definable as approbation qualified by the feeling of shrinking from the disagreeable.

Some Inconsistencies in the Modern Theory of the Judgment: W. B. PILLSBURY.

The inconsistency upon which most emphasis was placed lies in defining judgment as the ascription of reality to the given, and then retaining as judgment the proposition of formal logic under the assumption that the subject is the given whose reality is predicated. It was contended first that there is nowhere in consciousness a mere given, but that everything conscious, qua conscious, must have meaning. Consequently the psychological correlate of the judgment is the act of attention, while in the proposition there is essentially and always, two acts of attention, two judgments in the meaning of the definition. The only possible reason for regarding the proposition as a judgment under the modern definition is that

at the moment of speaking the subject is often relatively unimportant because the product of an earlier judgment, or that in consciousness there has been no subject, but that it has been introduced in speech as an after-thought. It is proposed to restrict the term judgment to the interjectional, the impersonal and perhaps the demonstrative judgments of current usage, and to designate by inference the mental process which lies behind the two-term proposition of formal logic. This second suggestion is favored by the growing tendency to regard the conclusion as the only vital part of the syllogism, and to regard the premises as at most tests of truth rather than as antecedent conditions for the attainment of the conclusion.

The Effect of Incentives on Work: W. R. WRIGHT, reported by W. B. PILLSBURY.

Experiments with the ergograph showed that not only do such incentives as working down to a line or block that limits the extent of movement make possible a greater amount of work than can be done without such incentive (*i. e.*, when the hand moves in the ergograph without having any definite object or point to reach), but also that work performed under the influence of definite incentive is less fatiguing than the same amount of work without incentive.

REVIEWS AND ABSTRACTS OF LITERATURE

Hume: The Relation of the Treatise of Human Nature (Book I.) to the Inquiry concerning Human Understanding. W. B. ELKIN. New York, The Macmillan Co. 1904. Pp. ix + 330.

While the aim of this book—an elaboration of an earlier dissertation—is, in the writer's own words, 'to clear up the obscurity regarding Hume's exact position in his two chief philosophical works,' and, consequently, a large part of the work is made up of textual analysis and comparison, the more ultimate purpose is clearly to contribute to a more adequate conception of Hume's place in the history of philosophy which the writer feels has been 'inadequate and defective.' To this clarification (needed perhaps as much in the case of Hume as in that of Kant) the author has contributed both positively and negatively; positively, in that through this comparative study the essentials of both works (which are described as positivism in epistemology, scepticism in metaphysics and agnosticism in religion) clearly emerge; and negatively, in that he disposes of the misconception, leading inevitably to confusion in regard to Hume's position, that the two works represent different standpoints.

The source of this inadequate conception the writer finds in the assumption that the 'Inquiry,' representing the more mature view of the author, should be taken as a basis for the estimation of Hume's position,

and from a defective interpretation of the two works according to which the 'Inquiry,' it is supposed, represents a real and significant change in the author's point of view. Both these positions, the assumption and the interpretation, Elkin finds unwarranted and sets over against them the following positive theses: (1) "The 'Inquiry,' when interpreted in the light of the 'Treatise,' is essentially identical, both in point of view and in doctrine, with the earlier work." (2) "Hume's peculiar significance for the history of philosophy lies wholly and solely in the 'Treatise.'"

The first thesis, the major premise of the argument of the book, is worked out in detail, first, from the internal evidence which arises in a systematic comparison of the two works on all the important points discussed by Hume. The work here is exhaustive and scholarly, with abundant and, in so far as the reviewer has tested them, accurate references to Hume's works themselves and to the Hume literature. To reconcile with this thesis of the fundamental identity of the two works the notable omissions from the 'Inquiry' of important features of the 'Treatise' as well as changes in emphasis, Dr. Elkin believes that no change in the *intrinsic* purpose of the author need be assumed. These omissions and changes in emphasis, he thinks, may all be accounted for by referring them to purely *extrinsic* motives, the desire to simplify and popularize, to gain fame and notoriety, etc. The grounds for this hypothesis are found in the external evidence of Hume's own letters and in the letters and comments of his contemporaries. It is here that the most interesting and original elements of the research appear, and while the question of method here involved—the extent to which the critic may carry such a distinction as that between intrinsic and extrinsic aims, or indeed the more ultimate psychological question of the extent to which such a distinction exists in an author's mind—is a difficult one, it would, nevertheless, when the evidence is properly weighed, appear that Hume himself believed the two works to be essentially the same, and, in so far as he was conscious of motives, made the modifications of the 'Inquiry' under the influence of the extrinsic motives attributed to him.

The following is the writer's own summary of his conclusions: "The position of both works is identical on the following points: intrinsic or primary aim, cause of perceptions, association of ideas, abstract or general ideas, cause and effect, philosophical probability, liberty and necessity and the reason of animals. The position of both works is practically the same on the following points: subject matter, method, nature and classification of perceptions, mathematics, belief, material substance and external existence. Agreement is implied, although not formally expressed, on the following points: the ideas of space and time, intuitive knowledge, the distinctions between natural and philosophical relations, between impressions of sensation and reflection and between the ideas of memory and imagination. On the subjects of unphilosophical probability, self and spiritual substance, it may be inferred from the general tenor of the treatment of related questions, from incidental references in other writings, and from statements in letters, that Hume's view was the same when he wrote the 'Inquiry' as when he composed the 'Treatise.' From his re-

marks on personal identity, in the appendix, it would seem that his view on this question underwent a change. The extent of this change, however, it is impossible to ascertain" (p. 293).

The second thesis—that "Hume's philosophical significance lies wholly in the 'Treatise'"—would seem to follow from the proof of the first. With respect to the treatment of particular philosophical problems (with the exception perhaps of his discussion of personal identity) this is probably true. Nevertheless, here again, for the critical historian of philosophy, a subtle question arises. If it is true, as Elkin says, that Kant, being unacquainted with the 'Treatise,' because of certain omissions in the 'Inquiry,' misinterpreted Hume on certain fundamental epistemological questions, may it not also be true that we should misinterpret him if we were acquainted only with the 'Treatise'? Elkin himself recognizes (p. 295) "his clearer psychological insight into the nature of belief and the function of instinct when he wrote the 'Inquiry,'" and that the latter is, therefore, much more positive than the 'Treatise.' Must not the historian with perspective see in him, then, not only the *enfant terrible* of empiricism, but also, in his later days, made mellow by contact with concrete experience, a harbinger (of course, always in his own way) of the voluntaristic reaction against the intellectualism of the eighteenth century? If there is such an intrinsic change from the 'Treatise' to the 'Inquiry' it is, perhaps, as Elkins says, merely 'an interesting fact' and 'whether it has any significance, aside from that, seems to be beyond the power of determination.' Be that as it may, a belief in its significance will, nevertheless, for many of Hume's readers probably remain a 'pious opinion.'

In conclusion, it may be noted that the value of the book as an aid to the study of Hume is much increased by an appendix giving in outline the parallelism between the 'Treatise' and the 'Inquiry,' and by a very complete bibliography. Its most conspicuous defect is the absence of an index.

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Principles of Physiological Psychology. WILHELM WUNDT. Translated from the fifth German edition (1902) by EDWARD BRADFORD TITCHENER. Vol. I., with 105 figures in the text. London, Swan, Sonnenschein and Co., Ltd; New York, The Macmillan Co. 1904. Pp. xvi + 347.

After a rather curious series of experiences, Professor Titchener has finally given us the beginning of his translation of Wundt's *Grundzüge*. It seems that in 1890 he carried with him to Leipzig a complete translation of the third (1887) edition of the *Grundzüge*, only to learn that a fourth was soon to appear. At the end of 1896 another translation was begun, this time of the fourth edition, and finished in 1899. When this was ready the fifth and final edition of the *Grundzüge* was in prospect. Now, however, no sixth edition can be possible and the publication of Part I. of the *Grundzüge der Physiologischen Psychologie* is a fact.

The difficulties of a translation of Wundt Professor Titchener has well stated. He has met them boldly and with a success possible only to a

man of his experience. The much-dreaded 'three-decker' German sentences, as Mark Twain once characterized this class of writing, have been broken up into separate sentences in the translation. I have carefully compared parts of the translation with the original, and have nothing but praise for the manner in which this has been done. The eight-line German sentence is taken and resolved into its simple parts, the points of division being determined by the connectives. And this has been done without any loss to the literalness or exactness of the English version.

Other good features of the translation are the division of the work into *parts* instead of *volumes*, the index of names and subjects at the end of each part, the pagination of the German edition placed on the binding sides of the pages of the translation, and the incorporation of ten pages (pp. 16-26) of the original fourth edition in the English version. I would suggest that this last named be done wherever the translator thinks it will add to the value of the work, since the division of the work into parts will allow of enough space for this purpose.

To those interested in the final appearance of the work I give below the number of pages to each part, its place in the German edition and its title as given by Professor Titchener.

English.	German division.		
Part I.	Vol. I.	pp. 1-138	338 pp.
Part II.	Vol. I., II.	pp. 339-553, 1-369	583 pp.
Part III.	Vol. II., III.	pp. 370-686, 1-106	422 pp.
Part IV.	Vol. III.	pp. 107-319	212 pp.
Part V.	Vol. III.	pp. 320-676	356 pp.
Part VI.	Vol. III.	pp. 677-794	117 pp.

- I. On the bodily substrate of mental life.
- II. Of the elements of mental life.
- III. Of the formation of sensory ideas.
- IV. Of the affective processes and of voluntary actions.
- V. Of the course and the connection of mental processes.
- VI. Final considerations.

Since each part is to have its own index of subjects and names, the special *Gesamtregister* is unnecessary. In the index of names, Wundt gives over 1,050. If the task be not too great, would it not be possible to fill out the 117 pages of the sixth part with an alphabetical bibliography similar to those given in Volkmann (fourth edition) and by Jodl (second edition)? It seems to me that if this be not too much to ask, such an addition would greatly enhance the value of the translation, if this indeed be possible.

FELIX ARNOLD.

NEW YORK CITY.

L'imagination. I. *Les images visuelles.* II. *Les images auditives.* III. *Les images motrices.* É. PEILLAUBE. *Revue de Philosophie*, Vol. II., 1902, pp. 701-718; III., 1903, pp. 172-189; V., 1905, pp. 560-578.

I

In his preliminary discussion, M. Peillaube emphasizes the fact that among early writers, the visual imagination was taken as the sole basis,

while the subject was studied *en bloc*, imagination being treated as a single faculty. Only since Taine and Galton has a more discriminating analysis been made. Now, we study not imagination, but images, making our division according to the sensations upon which the images are based. Psychology now goes into details, instead of dealing with generalities. When, however, we have decomposed the complexity of mental life, and treated visual, auditory, motor and other images, there still remains the question of mental synthesis. To stop with images would leave us with a sort of atomic mind dust, and would leave out of consideration the question of mental synthesis. After this has been discussed there finally remains the question which was put long ago by Aristotle: What is that which we call imagination? What is its nature? How is it distinguished from sensation, from intellect, from memory? The analysis of imagination, then, includes three parts, analysis, synthesis and nature or theory.

The analysis is begun with the visual images. Visual imagery plays an important part with chess players, painters and others. In visual hallucination, the image is so intensified as to produce the illusion of sensation. In hypnotic hallucination, however, the perception quickly drives out the image. Of the method of projection of the visual image, two kinds are observed: (1) The image is situated in the direction in which we believe the object to be placed. There is a feeling of intervening space. We say the image is in front, in the rear, to the left or to the right. (2) This feeling of intervening space is absent. We see the object in its real size, and with the concreteness of reality.

In general, the facts establish the existence of a visual type in which visual imagery predominates, and of a type in which visual imagery is subordinate, the latter being more abstract. The ideal visual type approaches the sensation, while the abstract type replaces detail by schematic outline.

As for auditory images, these are inferior to the visual, since they do not possess the same distinctness and richness. Visual images are determined by time and space, auditory only by time, which is unstable, passing from moment to moment. Auditory imagery is specially prominent in musicians. In hallucination, auditory images, like visual, tend to realize themselves. In dreams, visual imagery is usually more prominent than auditory. Concerning the nature of the 'internal' word or word image, we have two theories: (1) the word image is auditory (Egger), and (2) the word image is motor (Stricker). In general, the auditory image is less concrete than the visual, being determined only by time.

The motor image may be doubted because, as the author states, the sensation is also a question. The antinomy resides in the instantaneous nature of sensation, and the successive character of movement. However, the sensation corresponds to a succession of impressions, and what we have in the kinesthetic sensation is an immediate synthesis. This being the case, kinesthetic sensations are true sensations and hence their images are possible.

While as a type of visual imagery we have that in painters, and of auditory that in musicians, the motor type is difficult to trace. It is found especially in those using their muscles, as the manual worker, the gymnast, the equestrian, the ballet dancer and the like. The motor image seems also to be closely connected with other kinds of image. Musicians have motor images of their fingers, and singers of their vocal apparatus. In hallucination and in dreams the motor image is most readily realized. In hypnotic hallucination the subjects are rarely motor, but in dreams motor images are very numerous. In general the motor image plays a universal part in psychology. Not only does it play the predominating part in memory and imagination with certain subjects, but its influence is felt in all forms of mental activity.

II

The part in these papers which seems to me of significance is the implication that the senses most used must determine the type of imagery. This seems highly probable, and is worthy of further study. What I miss in the papers, however, is a closer analysis of the various types of imagery. It is hardly fair to offer these remarks as criticism, since the author will probably deal with such questions when he takes up the nature or theory of imagination. I take for granted, therefore, that the present study, excellent as far as it goes, will be followed by a more penetrating analysis, and what follows is merely suggestive towards this end.

Concerning the motor image it seems now to be established that it is of a sensory nature and not a pure '*Innervationsempfindung*.' Even Wundt in his fifth edition of the *Grundzüge* admits this (II., pp. 31-36). Physiologically, therefore, we would have not merely the brain cell, but also the end organ in a state of excitation when the motor image exists in consciousness. This aspect of the subject is not even mentioned by M. Peillaube, but he has probably kept it for his final treatment. A similar state of affairs is possible with the visual image. The physiological concomitants would not be the cerebral excitations alone, nor the end organ alone, but the two in cooperation. A few tests with the blind would shed some light on this subject. It is highly probable that the blind (those stricken with blindness in later life) translate all the words denoting visual fields into motor imagery and body attitudes and have no visual images *per se*. In fact, many of us continually do this.

Other features which remain to be discussed, if the subject is to be properly treated, are: the objectification of images, their fragmentariness, intensity, vividness, distinctness, their schematic character, their meaning, and their function as logical aids to action. In the discussion offered by M. Peillaube thus far, we have established the various types of imagery and their existence under various conditions. As his treatment is not yet complete, the above remarks can be taken as suggestions only.

FELIX ARNOLD.

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Quelques Considerations sur la nyctophobie chez les enfants. M. R. SENET. *Archives de Psychologie*, February-March, 1905. Pp. 350-357.

This article is based on observations made in *l'Ecole normale de Dolores (Rep. Argentine)* on 519 children. They point, in the first place, to the conclusion that all children have some degree of fear, either of night or of darkness. According to the statistics, at any rate, all children in the first three school years fear in some degree the night. This fear is independent of the character of the child, as it occurs in children superior in other directions for courage and self-assertiveness. The percentage of night fears falls off rapidly from the third to the sixth school year.

In many of the cases examined, the fear was, to be sure, quite mild and could scarcely be called abnormal, but there are, over and above these, many cases of night fear that amount to real terror. Darkness is, of course, to a certain extent depressing to even the healthy-minded, but this mere depression is not to be classed with true night terror.

The author believes that fear of night is a secondary phenomenon, some other type of fear being really underneath, *e. g.*, fear of assassins, of robbers, of ghosts, etc. "We have not," he says, "found any case where fear of night was not allied with some other fear. If there are such cases they are rare."

He holds that fear of night is of intellectual rather than of emotional origin; that it springs from the recognition of possible dangers favored by darkness. This apprehension diminishes with age because of increase of confidence in one's power of self-defense. Thus it is quite rare among men.

Fear of night involves certain pathological states of the imagination and renders one liable to hallucinations of various kinds, especially auditory, visual and tactual. The following five stages have been noted in most of the cases examined: (1) Experience of depression; (2) general hyperesthesia, especially auditory; (3) the projection into space of centrally initiated tactual and optical phenomena; (4) true hallucinations, auditory, visual and tactual; (5) anguish or distress.

The usual method of trying to drive off the fear by attempting to accustom the child to darkness is condemned as futile. Such treatment serves to augment rather than to diminish the difficulty. The cases of two children are briefly analyzed in proof of this. The fear of darkness is due chiefly to servants telling all sorts of terrifying things to and in the presence of children, or to the effort to restrain them by frightening them. The fears thus aroused are merely exaggerations of the impulse, or instinct, of self-preservation. Thus in various ways children hear things which induce nightmares and impair normal sleep. Fears caused in this way persist for a long time.

The conclusions are as follows: (1) In most cases fear of night is only a collateral fear. (2) In other cases there is a general nocturnal dread, *i. e.*, there is not only fear of night, but of all that night may con-

ceal. (3) This form of fear can not be gotten rid of by opposing it directly. The fear which is underneath must be discovered and dealt with.

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JOURNALS AND NEW BOOKS

MIND, January, 1905, N. S., No. 53. '*Absolute*' and *Relative Truth* (pp. 1-14): H. H. JOACHIM. - Against the view 'that every judgment is either true or false and what is true is true always and absolutely and completely' the author contends that truth consists in the self-coherence of a system of judgments and is essentially relative. *On the Psychology of a Group of Christian Mystics* (pp. 15-27): J. H. LEUBA. - An account of mysticism, with special reference to the part played by the sexual feelings in determining the character of the mystic's trance and the nature of his conception of God. *Professor James on 'Humanism and Truth'* (pp. 28-41): H. W. B. JOSEPH. - The clearest and most forceful criticism of pragmatism that has yet appeared. *Applied Axioms* (pp. 42-57): ALFRED SIDGWICK. - One conclusion of this article would seem to be that because an axiom is true it does not follow that it can be used as a major premise. *The Meaning of the Time Direction* (pp. 58-73): R. A. P. ROGERS. - Time-direction is due to conscious will; it is, however, objectively real in nature, hence there must be a supreme conscious will animating nature. *Symbolic Reasoning* (VI.) (pp. 74-81): H. MACCOLL. - A discussion of the question as to whether propositions imply the existence of their terms. Discussion: *The Paradox of Psychology* (pp. 82-84): J. SOLOMON. - We only become conscious of mental states as such because we can not always be adequately conscious of their objects. Critical Notices: *Campbel Fraser, Biographia Philosophia*: J. H. STIRLING. *Revue de Metaphysique et de Morale*: NORMAN SMITH. J. T. Merz, *A History of European Thought in the Nineteenth Century*: C. G. KNOTT and J. ARTHUR THOMSON. Alexander Bain, *Autobiography*: W. L. MACKENZIE. J. Milne Bramwell, *Hypnotism*: W. MCDUGALL. New Books. Philosophical Periodicals. Notes: *Mind Association: full List of Officers and Members*. *Lewis Carroll's Logical Paradox*: MISS E. C. JONES.

MIND, April, 1905, N. S., No. 54. *The Naturalism of Hume* (I.) (pp. 149-173): NORMAN SMITH. - The author aims to show 'that the establishment of a purely naturalistic conception of human nature by the thorough subordination of reason to feeling and instinct, is the determining factor in Hume's philosophy.' *Has Mr. Moore Refuted Idealism?* (pp. 174-189): C. A. STRONG. - The author believes that a right understanding of the distinction between the feeling of a content and the intellectual consciousness of it will greatly diminish the force of Mr. Moore's argument. *Humanism and Truth Once More* (pp. 190-198): WILLIAM JAMES. - A reply to Mr. Joseph's criticism of pragmatism. The point made by Mr. Joseph, that humanism contradicts itself by ascribing anterior logical validity to the very categories which it claims to

explain as mere psychological products of evolution, is treated lightly by the author, who appears to feel that this extraordinary procedure of the pragmatist is a quite ordinary case of explaining hypothetically the origin of a present fact. *On Analogy and Its Philosophical Importance* (pp. 199-209): H. HÖFFDING. - A defense of the view that truth is dynamic or pragmatic, that all ideas are symbolic, and that explanation, whether in science, metaphysics or religion, proceeds by analogy. *Mr. Bradley's 'Absolute Criterion'* (pp. 210-220): H. V. KNOX. - "The intention of the present paper . . . is to traverse Mr. Bradley's contention that in the principle 'ultimate reality' is such that it does not contradict itself we have an 'absolute criterion' for distinguishing appearance from reality. I hope to show that the principle of contradiction so understood is self-contradictory." *Phenomenalism in Ethics* (pp. 221-234): F. C. DOAN. - "The moral life is to be found and is to get its expression within the phenomenal series and any absolute view of it must be peculiarly ineffectual in attempting to complete the series in facts of experience." Discussions: *The Definition of 'Pragmatism' and 'Humanism'* (pp. 235-240): F. C. S. SCHILLER. - An autobiographical account of the genesis of Mr. Schiller's humanism, and a further elucidation of its nature and meaning as distinguished from pragmatism. *Energy and Effort* (pp. 241-243): J. S. STUART-GLENNIE. - The author gives a brief restatement of a cosmological theory first promulgated by him in 1859. Critical Notices: Hans Cornelius, *Einleitung in die Philosophie*: G. E. MOORE. Georg Simmel, *Kant*: G. DAWES-HICKS. G. Stanley Hall, *Adolescence*: W. H. WINCH. Rudolf Eucken, *Geistige Strömungen der Gegenwart*: DAVID MORRISON. R. K. GAYE, *The Platonic Conception of Immortality and its Connection with the Theory of Ideas*: JOHN BURNET. New Books. Philosophical Periodicals. Notes: *Lewis Carroll's Logical Paradox*: (W.). *Note Concerning Thought and Reality*: SIR OLIVER LODGE.

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NOTES AND NEWS

THE issue of the *Revue de Métaphysique et de Morale* for May is the third of its series of special numbers, and is devoted to Antoine Augustin Cournot. It contains contributions from eminent French scholars exhibiting the great variety of Cournot's interests, and concludes with an account of the philosopher's life and activity by Professor H. L. Moore of Columbia University. The editor of the *Revue* is to be congratulated on thus bringing to deserved attention the work of one of the most important French thinkers of the last century. Cournot's contributions to philosophy, to economics, to the science of statistics and probability, to the science of education, to the philosophy of history, and to the classification of the sciences, although of very considerable value, have been strangely neglected both by his own countrymen and by others. The more important of the papers in this *numéro exceptionnel* will be reviewed in this JOURNAL.

THE statue of Sir Thomas Browne, which is being executed by Mr. Henry Pegram, A.R.A., is now well advanced, and it is intended that it shall be erected and unveiled in its position in the Haymarket, Norwich, on October 19, the tercentenary of Sir Thomas Browne's birth.

THE courses that Professor Wilhelm Ostwald, of the University of Leipzig, will offer at Harvard University during the first half of the approaching academic year are: 'The Philosophy of Natural Science,' three lectures a week, and 'The Fundamental Conceptions of Chemistry' and 'Catalysis,' each one hour a week.

DR. H. K. WOLFE, formerly professor of philosophy at the University of Nebraska and recently principal of the Lincoln High School, has been elected professor of philosophy and education at the University of Montana.

MR. A. R. LORD, B.A., Oxon., assistant to the professor of moral philosophy and lecturer on political science in Aberdeen University, has been appointed professor of philosophy and history in the Rhodes University College, Grahamstown, Cape Colony.

DR. H. W. STUART has been elected to the chair of philosophy at Lake Forest University to succeed Professor Smith who had resigned on account of ill-health.

DR. T. DE LAGUNA of Cornell University has been called to the University of Michigan as assistant professor of philosophy and education.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE POSTULATE OF IMMEDIATE EMPIRICISM

THE criticisms made upon that vital but still unformed movement variously termed radical empiricism, pragmatism, humanism, functionalism, according as one or another aspect of it is uppermost, have left me with a conviction that the *fundamental* difference is not so much in matters overtly discussed as in a presupposition which remains tacit: a presupposition as to what experience is and means. To do my little part in clearing up the confusion, I shall try to make my own presupposition explicit. The object of this paper is, then, to set forth what I understand to be the postulate and the criterion of *immediate empiricism*.¹

Immediate empiricism postulates that things—anything, everything, in the ordinary or non-technical use of the term ‘thing’—are what they are experienced as. Hence, if one wishes to describe anything truly, his task is to tell what it is experienced as being. If it is a horse which is to be described, or the *equus* which is to be defined, then must the horse-trader, or the jockey, or the timid family man who wants a ‘safe driver,’ or the zoologist or the paleontologist tell us what the horse is which is experienced. If these accounts turn out different in some respects, as well as congruous in others, this is no reason for assuming the content of one to be exclusively ‘real,’ and that of others to be ‘phenomenal’; for each account of what is experienced will manifest that it is the account of the horse-dealer, or of the zoologist, etc., and hence will give the conditions requisite for understanding the differences as well as the agreements

¹ All labels are, of course, obnoxious and misleading. I hope, however, the term will be taken by the reader in the sense in which it is forthwith explained, and not in some more usual and familiar sense. Empiricism, as herein used, is as antipodal to sensationalistic empiricism, as it is to transcendentalism, and for the same reason. Both of these systems fall back on something which is defined in non-directly-experienced terms in order to justify that which is directly experienced. Hence I have criticized such empiricism (*Phil. Rev.*, Vol. XI., No. 4, p. 364) as essentially absolutistic in character; and also (‘Studies in Logical Theory,’ p. 30, 58) as an attempt to build up experience in terms of certain methodological checks and cues of attaining *certainty in knowledge*.

of the various accounts. And the principle varies not a whit if we bring in the psychologist's horse, the logician's horse or the metaphysician's horse.

In each case, the nub of the question is, *what sort of experience* is meant or indicated: a concrete and determinate experience, varying, when it varies, in specific real elements, and agreeing, when it agrees, in specific real elements, so that we have a contrast, not between a Reality, and various approximations to, or phenomenal representations of Reality, but between different reals of experience. And the reader is begged to bear in mind that from this standpoint, when 'an experience' or 'some sort of experience' is referred to, 'some thing' or 'some sort of thing' is always meant.

Now, this statement that things are what they are experienced to be is usually translated into the statement that things (or, ultimately, Reality, Being) *are* only and just what they are *known* to be or that things are, or Reality *is*, what it is for a conscious knower—whether the knower be conceived primarily as a perceiver or as a thinker being a further and secondary question. This is the root-paralogism of all idealisms, whether subjective or objective, psychological or epistemological. By our postulate, things are what they are experienced to be; and, unless knowing is the sole and only genuine mode of experiencing, it is fallacious to say that Reality is just and exclusively what it is or would be to an all-competent all-knower; or even that it *is*, relatively and piecemeal, what it is to a finite and partial knower. Or, put more positively, knowing is one mode of experiencing, and the primary philosophic demand (from the standpoint of immediatism) is to find out *what* sort of an experience knowing is—or, concretely how things are experienced when they are experienced *as known things*.² By concretely is meant, obviously enough (among other things), such an account of the experience of things as known that will bring out the characteristic traits and distinctions they possess as things of a knowing experience, as compared with things experienced esthetically, or morally, or economically, or technologically, etc. To assume, because from the standpoint of the knowledge experience things *are* what they are known to be, that, therefore, metaphysically, absolutely, without qualification, everything in its reality (as distinct from its 'appearance,' or phenomenal occurrence) is what a knower would find it to be, is, from the imme-

² I hope the reader will not therefore assume that from the empiricist's standpoint knowledge is of small worth or import. On the contrary, from the empiricist's standpoint it has *all* the worth which it is concretely experienced as possessing—which is simply tremendous. But the exact *nature* of this worth is a thing to be found out in describing what we mean by experiencing objects as known—the actual differences made or found in experience.

diatist's standpoint, if not the root of all philosophic evil, at least one of its main roots.

For example, I start and am flustered by a noise heard. Empirically, that noise *is* fearsome; it *really* is, not merely phenomenally or subjectively so. That *is what* it is experienced as being. But, when I experience the noise as a *known* thing, I find it to be innocent of harm. It is the tapping of a shade against the window, owing to movements of the wind. The experience has changed; that is, the thing experienced has changed—not that an unreality has given place to a reality, nor that some transcendental (unexperienced) Reality has changed,³ not that truth has changed, but just and only the concrete reality experienced has changed. I now feel ashamed of my fright; and the noise as fearsome is changed to noise as a wind-curtain fact, and hence practically indifferent to my welfare. This is a change of experienced reality effected through the medium of cognition. The content of the latter experience cognitively regarded is doubtless *truer* than the content of the earlier; but it is in no sense more real. To call it truer, moreover, must, from the empirical standpoint, mean a concrete *difference* in actual things experienced.⁴ Again, in many cases, it is only in retrospect that the prior experience is cognitively regarded at all. In such cases, it is only in regard to contrasted contents *in* the subsequent experience that the determination 'truer' has force.

Perhaps some reader may now object that as matter of fact the entire experience *is* cognitive, but that the earlier parts of it are only imperfectly so, resulting in a phenomenon which is not real; while the latter part, being a more complete cognition, results in what is relatively, at least, more real.⁵ In short, a critic may say

* Since the non-empiricist believes in things-in-themselves (which he may term 'atoms,' 'sensations,' transcendental unities, *a priori* concepts, *an* absolute experience, or whatever), and since he finds that the empiricist makes much of change (as he must, since change is continuously experienced) he assumes that the empiricist means that *his own* non-empirical Realities are in continual flux, and he naturally shudders at having his divinities so violently treated. But, once recognize that the empiricist doesn't have any such Realities at all, and the entire problem of the relation of change to reality takes a very different aspect.

* It would lead us aside from the point to try to tell just what is the nature of the experienced difference we call truth. Professor James's recent articles may well be consulted. The point to bear in mind here is just what sort of a thing the empiricist must mean by true, or truer (the noun Truth is, of course, a generic name for all cases of 'Trues'). The adequacy of any particular account is not a matter to be settled by general reasoning, but by finding out what sort of an experience the truth-experience actually is.

* I say 'relatively,' because the transcendentalist still holds that finally the cognition is imperfect, giving us only some symbol or phenomenon of Reality

that, when I was frightened by the noise, I *knew* I was frightened; otherwise there would have been no experience at all. At this point, it is necessary to make a distinction so simple and yet so all-fundamental that I am afraid the reader will be inclined to pooh-pooh it away as a mere verbal distinction. But to see that *to the empiricist* this distinction is not verbal, but real, is the precondition of any understanding of him. The immediatist must, by his postulate, ask what is the fright experienced *as*. Is what is actually experienced, I-know-I-am-frightened, or I-am-frightened? I see absolutely no reason for claiming that the experience *must* be described by the former phrase. In all probability (and all the empiricist logically needs is just one case of which this is true) the experience is simply and just of fright-at-the-noise. Later one may (or may not) have an experience describable *as* I-know-I-am- (-or-was) and improperly or properly, frightened. But this is a different experience—that is, a different *thing*. And if the critic goes on to urge that the person ‘*really*’ must have known that he was frightened, I can only point out that the critic is shifting the venue. He may be right, but, if so, it is only because the ‘*really*’ is something not concretely experienced (whose nature accordingly is the critic’s business); and this is to depart from the empiricist’s point of view, to attribute to him a postulate which he expressly repudiates.

The material point may come out more clearly if I say that we must make a distinction between a thing as *cognitive*, and one as *cognized*.⁶ I should define a cognitive experience as one which has certain bearings or implications which induce and fulfill themselves in a subsequent experience in which the relevant thing is experienced *as* cognized, *as* a known object, and is thereby transformed, or reorganized. The fright-at-the-noise in the case cited is obviously *cognitive*, in this sense. By description, it induces an investigation or inquiry in which both noise and fright are objectively stated or presented—the noise as a shade-wind fact, the fright as an organic reaction to a sudden acoustic stimulus, a reaction which under the given circumstances was useless or even detrimental, a maladaptation. Now, pretty much all of experience is of this sort (the ‘*is*’ meaning, of course, is experienced *as*), and the empiricist is

(which is only in the Absolute or in some Thing-in-Itself)—otherwise the curtain-wind fact would have as much ontological reality as the existence of the Absolute itself: a conclusion at which the non-empiricist perhorresces, for no reason obvious to me—save that it would put an end to his transcendentalism.

⁶ In general, I think the distinction between *-ive* and *-ed* one of the most fundamental of philosophic distinctions, and one of the most neglected. The same hold of *-tion* and *-ing*.

false to his principle if he does not duly note this fact.⁷ But he is equally false to his principle if he permits himself to be confused as to the concrete differences in the two things experienced.

There are two little words through explication of which the empiricist's position may be brought out—'*as*' and '*that*.' We may express his presupposition by saying that things are what they are experienced *as* being; or that to give a just account of anything is to tell what *that* thing is experienced to be. By these words I want to indicate the absolute, final, irreducible and inexpugnable concrete *quale* which everything experienced not so much *has* as *is*. To grasp this aspect of empiricism is to see what the empiricist means by objectivity, by the element of control, a principle of guidance and selection, the normative or standard element in experience. Suppose we take, as a crucial case for the empiricist, an out and out illusion, say of Zöllner's lines. These are experienced as convergent; they are 'truly' parallel. If things are what they are experienced as being, how can there be the distinction that we draw between illusion and the true state of the case? There is no answer to this question except by sticking to the fact that the experience of the lines as divergent is a concrete qualitative thing or *that*. It is *that* experience which it is, and no other. And if the reader rebels at the iteration of such obvious tautology, I can only reiterate that the realization of the *meaning* of this tautology is the key to the whole question of the objectivity of experience, as that stands to the empiricist. The lines of *that* experience are divergent: not merely *seem* so. The question of truth is not as to whether Being or Non-Being, Reality or mere Appearance, is experienced, but as to the *worth* of a certain concretely experienced thing. The only way of passing upon this question is by sticking in the most uncompromising fashion to *that* experience as real. *That* experience is that two lines with certain cross-hatchings are apprehended as convergent; only by taking that experience as real and as fully real, is there any basis for or way of going to an experienced knowledge that the lines are parallel. It is in the concrete thing *as experienced* that all the grounds and clues to its own intellectual or logical rectification are contained. It is because this thing, afterwards adjudged false, is a concrete *that*, that it develops into a corrected experience (that is, experience of a corrected thing—we reform things just as we reform ourselves or a bad boy) whose full content is not a whit more real, but which is experienced as true or as truer.

⁷What is criticized, now as 'geneticism' (if I may coin the word) and now as 'pragmatism' is, in its truth, just the fact that the empiricist does take account of the experienced 'drift, occasion and contexture' of things experienced—to use Hobbes's phrase.

If *any* experience, then a *determinate* experience; and this determinateness is the only, and is the adequate, principle of control, or 'objectivity.' The experience may be of the vaguest sort. I may not see any thing which I can identify as a familiar object—a table, a chair, etc. It may be dark; I may have only the vaguest impression that there is something which looks like a table. Or I may be completely befogged and confused, as when one rises quickly from sleep in a pitch-dark room. But this vagueness, this doubtfulness, this confusion is the thing experienced, and, *qua* real, is as 'good' a reality as the self-luminous vision of an Absolute. It is not just vagueness, doubtfulness, confusion, at large or in general. It is *this* vagueness, and no other; absolutely unique, absolutely what *it* is.⁸ Whatever gain in clearness, in fullness, in trueness of content is experienced must grow out of some element in the experience of *this* experienced as what it is. To return to the illusion: If the experience of the lines as convergent is illusory, it is because of some elements in the thing as experienced, not because of something defined in terms of externality to this particular experience. If the illusoriness can be detected, it is because the thing experienced is real, having within its experienced reality elements whose *own mutual* transcendence effects its reconstruction. Taken concretely, the experience of convergent lines contains within itself the elements of the transformation of its own content. It is *this* thing, and not some separate truth, which clamors for its own reform. There is, then, from the empiricist's point of view, no need to search for some aboriginal *that* to which all successive experiences are attached, and which is somehow thereby undergoing continuous change. Experience is always of *thats*; and the most comprehensive and inclusive experience of the universe which the philosopher himself can obtain is the experience of a characteristic *that*. From the empiricist's point of view, this is as true of the exhaustive and complete insight of a hypothetical all-knower as of the vague, blind experience of the awakened sleeper. As reals, they stand on the same level. As trues, the latter has by definition the better of it; but if this insight is in any way the truth of the blind awakening, it is because the latter has, in its *own* determinate *quale*, elements of real continuity with the former; it is, *ex hypothesi*, transformable through a series of experienced reals, without break of continuity into the absolute thought-experience. There is no need of logical manipulation to effect the transformation, nor *could* any logical consideration effect it. If effected at all it is just

⁸One does not so easily escape medieval Realism as one thinks. Either every experienced thing has its own determinateness, its own unsubstitutable, unredeemable reality, or else 'generals' are separate existences after all.

by immediate experiences, each of which is just as real (no more, no less) as either of the two terms between which it lies. Such, at least, is the meaning of the empiricist's contention. So, when he talks of experience, he does not mean some grandiose, remote affair which is cast like a net around a succession of fleeting experiences; he does not mean an indefinite total, comprehensive experience which somehow engirdles an endless flux; he means that *things* are what they are experienced to be, and that every experience is *some* thing.

From the postulate of empiricism, then (or, what is the same thing, from a *general* consideration of the concept of experience), nothing can be deduced, not a single philosophical proposition.⁹ The reader may hence conclude that all this just comes to the truism that experience is experience, or is what it is. If one attempts to draw conclusions from the bare concept of experience, the reader is quite right. But the real significance of the principle is that of a method of philosophical analysis—a method identical in kind (but differing in problem and hence in operation) with that of the scientist. If you wish to find out what subjective, objective, physical, mental, cosmic, psychic, cause, substance, purpose, activity, evil, being, quantity—any philosophic term, in short—means, go to experience and see what it is experienced *as*.

Such a method is not spectacular; it permits of no offhand demonstrations of God, freedom, immortality, nor of the exclusive reality of matter, or ideas, or consciousness, etc. But it supplies a way of telling what all these terms mean. It may seem insignificant, or chillingly disappointing, but only upon condition that it be not worked. Philosophic conceptions have, I believe, outlived their usefulness considered as stimulants to emotion, or as a species of sanctions; and a larger, more fruitful and more valuable career awaits them considered as specifically experienced meanings.

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⁹ Excepting, of course, some negative ones. One could say that certain views are certainly *not* true, because, by hypothesis, they refer to nonentities, i. e., non-empiricals. But even here the empiricist must go slowly. From his own standpoint, even the most professedly transcendental statements are, after all, real as experiences, and hence negotiate some transaction with facts. For this reason, he can not, in theory, reject them *in toto*, but has to show concretely how they arose and how they are to be corrected. In a word, his logical relationship to statements that profess to relate to things-in-themselves, unknowables, inexperienced substances, etc., is precisely that of the psychologist to the Zöllner lines.

A NEGLECTED 'CONTEXT' IN 'RADICAL EMPIRICISM'

THE recent declaration¹ of Professor James that consciousness as a metaphysical entity is non-existent has entrancing potentialities, whether in the field of metaphysic or of psychology. That 'to many it will sound materialistic'² is doubtless true, but I believe that to others, also, it heralds the advent of some later stage of philosophizing in which 'rationalism'³ may be discussed upon its merits, free from entanglements with fictitious entities which have in the past obscured its real message. For German idealism, the later rationalism, came into the world with its transcendental ego not only as a corrective of the extreme, one-sided, psychological atomism of the British school, but in pronounced hostility to entities of whatever description, succumbing in its turn to the universal human tendency to objectify, substantialize and hypostatize functions and relations. Now consciousness, the last of the entities on the 'ideal,' 'inner' or 'spiritual' side of experience, has always been the chief prop of the teleologist, yet, conceived as an entity, it has really been the chief obstacle in the way of our recognizing a purposive order in the external universe. I believe, in fact, that whatever truth the teleological view contains can never be manifest until we give the term 'consciousness' a new meaning, recognizing that it means only objects⁴ in a certain relation. For upon the view that it exists in separation from content there depends, of necessity, a view of the physical world which forever precludes the

¹ 'Does Consciousness Exist?' THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, September 1, 1904.

² *Ibid.*, p. 491.

³ As opposed to 'ordinary empiricism,' *e. g.*, in 'Radical Empiricism,' *ibid.*, p. 534.

⁴ In this paper I use the term 'object' for a specific experience, or for any content of the present experience which is more or less definitely individualized as quality, idea, thing, etc. That an object is nothing, if merely presented, I fully recognize with the idealist, and therefore, notwithstanding Dr. Montague's contention (this JOURNAL, Vol. II., No. 2, p. 50), fail to understand the 'incompatibility of any form of idealism with the view that consciousness is a relation between its objects.' To say that 'things must be before they can be related' (these are the words of the reviewer) is surely to separate things and relations. It is not only not a necessary consequence of relationism, but a return to a purely substantive view, which is incompatible with relationism. Organic idealism, as I should like to call a consistent relationism, requires us to admit only that where relations exist there objects exist; which is quite compatible with the view that things are in turn dependent upon relationships. 'Consciousness' is a relation of experiences, but the separateness of the experiences, which is implied in giving this notation to consciousness, is, again, an empirical fact only as this peculiar form of relationship is presupposed.

possibility of recognizing as present in it those functions and relations which the teleologist emphasizes as the clue to purposiveness in nature. At another time I hope to furnish reasonable grounds for this attitude; but, before a study of the implications of an objective interpretation of consciousness can be undertaken, preliminary questions regarding the nature of consciousness itself, which arise from a reading of 'Radical Empiricism,' must be discussed, and to these the present paper will be for the most part confined. This discussion I shall preface with a brief statement of the cumulative evidence which favors the view that consciousness as an entity has no more claim upon our belief than the 'unthinking substance' of Bishop Berkeley's polemic.

I

1. First then, not least, it might appear, if our argument could at this point be more than mere summary, there is the witness of 'common sense.' We have grown so accustomed to speak of the naïve dualism of common sense⁵ that we have now come to regard it as inseparable from the plain man's outlook upon the world. To the philosopher it has become axiomatic, and half the zest and interest in his philosophizing would be lost, if the plain man should turn out to be a naïve monist. For with no dualism to overcome, much of what has been written since Descartes would be of historic interest only, and there would be less reason for persuading the neophyte to follow the tortuous by-paths of materialism and psychological idealism, or gaze awe-struck upon the giddy heights of critical and absolute idealism, in order to arrive finally at the experiential monism, or at least modified dualism, whither in contemporary philosophy we are now tending. Common-sense dualism is a straw man, a useful fiction perhaps, but a view foisted upon the plain man to make him conscious of his limitations and of the usefulness of the metaphysical peregrinations which he is invited to follow. It is not, however, descriptive of his naïve attitude.

For common sense is practical. It does not readily apprehend the notion of a separable consciousness. For it reality is what is related to its interests. Thoughts and things are to a large extent interchangeable. Consciousness is merely a convenient term which comprises emotions, thoughts and other objects after their kind, less vivid, interesting and important than the situations which excite the

⁵ Popular philosophy is without doubt dualistic, but I can not believe that this is also true of 'common sense' when by the latter we mean the habitual attitude of the practical man toward things. Cf. Professor James's article on 'The Place of Affectional Facts in a World of Pure Experience,' this JOURNAL, Vol. II., p. 280.

emotions or the things in which thoughts 'terminate.' These thoughts and things are now within, now without, consciousness, between which and a material world there is no hard and fast boundary. Saving always theological teaching concerning a separable soul, and phylogenetic or ontogenetic suggestions of an inner self—suggestions which arise only when common sense is lured into philosophizing—common sense is practically monistic.

2. There is, in the second place, the historical argument for the non-existence of consciousness. Descartes's reaffirmation of the Augustinian principle of the ultimate reality of self-consciousness was an important step in advance, but by it practically the whole of subsequent philosophy was committed to the impossible task of uniting the two sundered realms of thought and extension. One significant trend of post-Cartesian metaphysic is clear. It has advanced by successive negations of those entities which, at each earlier stage in this process of development, were accepted as ultimate revelations of consciousness, until now, on the idealistic side, 'consciousness' alone remains, the vestigial concept which marks the path by which contemporary philosophy has evolved from Descartes.

But by the historical argument I mean not only this tendency which, in 'Radical Empiricism' and kindred theories, is soon to overtake and account for consciousness, but the method of this same thinker who stands at the beginning of the process. If the historic doubt had been a trifle more searching, the 'I think' would have stood the test of analysis as little as 'sensible things.' The self would have yielded up its ideational and sensational content. Self and things would have turned out to be upon the same level as differing groups of experiences. The metaphysical chasm would not have been created, and we should not have had the historic dualism. The ultimate and incontrovertible fact would have been, not the 'I think,' or even thought (*cogitans*), but simple 'experience.'

On the other hand, if the Cartesian method had begun, not with doubt, but with acceptance of experience at its face-value, the same result would have been reached. For the experience of the moment, cross-sectioned and taken without presupposition, reveals objects only, with varying degrees of clearness and distinctness, with differing psychological attributes, but, apart from the perspective which metaphysical prepossession furnishes, equally real. Since Descartes philosophy has completed its circuit, and now, in radical empiricism, returns to its starting-point, emphasizing this time, not doubt, but naïve acceptance.

3. The phylogenetic account of that class of entities which, severally, are termed 'soul,' 'spirit,' 'ego' and the like, tends also

toward a thoroughgoing philosophical empiricism, in which the relations substantialized by these terms shall be viewed as intelligible objective content. For anthropology and psychology are agreed that, in the development of human knowledge about the world through the agencies of dreams, death, and social experience, a doubling of experience into inner and outer has somewhere taken place, and, although the question of origins is always to be kept apart from the question regarding a thing's reality, that a thing has had an origin different from that which we supposed it to have, is probable evidence that its reality, though genuine, has been mis-conceived. Now consciousness is of a piece with the foregoing entities and thus from a third aspect its independent⁶ reality may be viewed with suspicion.

4. The ontogenetic argument, as written in the psychologies and in the special contributions of Hall, Baldwin and others, is of similar import, but this brief orientation of the problem must suffice. The reader is left to supply the context and to accept or reject my supposition that the above are sufficient reasons for regarding the ordinary and even the idealistic notion of consciousness with suspicion. Common sense is probably against it. Philosophically it has been given prominence and has been opposed to things as a result of inadequate analysis. Likewise it is a growth. And now, empirically, what is it? This is the fifth argument and the one which is to occupy us here.

Consciousness is usually regarded as indefinable or as something which 'we can define only in terms of itself'⁷ or processes which are nearly synonymous with the thing defined. It is practically synonymous with attention, says one; it signifies our awareness of objects, says another; 'it is the point of division between mind and not mind,'⁸ says a third; or 'whatever we are when we are awake—that is to be conscious,'⁹ according to a fourth. But the 'awareness,' the 'attention' and 'the being awake' are only names for consciousness or aspect of consciousness. Now 'Radical Empiricism' believes that we can get along very well without the synonyms, or at least that we can define consciousness in terms of things, and accordingly to radical empiricism we turn, having in mind its own caution that in interpreting experience objectively and substantively we must be true to every real relation.

⁶ Or quasi-independence, which is still implicit in any idealism.

⁷ ANGELL, 'Psychology,' 1905, p. 1.

⁸ Baldwin, quoted in the 'Dictionary of Philosophy and Psychology,' Vol. I., p. 216.

⁹ Ladd, *loc. cit.*

II

Elsewhere¹⁰ I have given some reasons for objecting to the common belief that things and thoughts are heterogeneous entities. Empirically our world at any moment comprises simply objects and groups of objects in various relations to one another. Some of them we term thoughts, others we term things, but psychological differences and the context or relations in which these objects are taken constitute the sole ground for separation into the two classes, ideas and things. For the rest, the separation of these groups into 'inner' and 'outer' is due to the hypostatization of this concept, 'consciousness,' which we are considering.

Assuming the truth of this position, and that, in the words of Professor James, "'thoughts' and 'things' are names for two sorts of objects which common sense will always find contrasted and will always oppose to each other,"¹¹ but that no deeper difference is hinted in our unbiased experience of the moment, we have now to inquire what consciousness, stripped of the supernaturalism which still clogs idealism, really is.

The answer of 'Radical Empiricism,' *it is a context of experiences*, is accepted in the present paper. The further question, *what context?* is the crucial one and, in the writer's opinion, the main issue which now divides radical empiricism from a sober-minded and, if the two seemingly contradictory terms may be conjoined, experiential transcendentalism. For, if transcendentalism¹² and idealism abandon their entities, and if radical empiricism will really do full justice to relational experiences, neglecting no pertinent contexts, we shall be provided with a least common denominator in terms of which relations emphasized by transcendentalist may be properly evaluated. I believe, however, that radical empiricism has treated as irrelevant a context which is in the highest degree important for the understanding of that function which we term consciousness, when by this we mean, not the mere aggregate of processes, but subject and knower. This is simply the *total context*¹³ in the given experience of the moment, a context which includes not only association groups, but an indefinite fringe of objects which are indifferently real or ideal until manipulated by definite associa-

¹⁰ 'An Interpretation of Some Aspects of the Self,' *Philosophical Review* Vol. XII., No. 1.

¹¹ 'Does Consciousness Exist?' this JOURNAL, Vol. I., No. 18, p. 477.

¹² As used by Professor James in these articles.

¹³ Total, not in the sense of complete, but in the sense of *inclusive* and presented as some sort of system.

tion-systems. Accordingly, to this total or undifferentiated field of content we turn.¹⁴

1. If we put ourselves at the point of view from which radical empiricism sets out, its reason for neglecting the *total context* will appear. It would seem that the given 'pure experience,'—since it is just what we find our world to be when we free ourselves from pre-suppositions and interests in special association-systems, by means of which our object of focal attention is being defined,—should be the 'one primal stuff or material in the world, a stuff of which everything is composed.'¹⁵ But we are told that this is only a manner of speaking, and that genuinely 'there is no general stuff of which experience at large is made,'¹⁶ there being "as many stuffs as there are 'natures' in the things experienced."¹⁷

My first query is raised here. If it is incorrect to speak of a general stuff of which experience is made, why is it not equally incorrect to speak of particular stuffs? They, the defined objects, are there, to be sure, when they appear, but only when they appear. The pure experience or unqualified 'that' is neither general nor particular; it consists neither of one 'nature' nor of many natures, so far as the pure experience itself will tell me. Until the latter develops a nature or natures, or until 'the instant field of the present' is succeeded by another field of qualified content, due to the operation of association-systems, this instant field of the present is simply what it declares itself—'there,' but 'unqualified.'

The significance of these objections may appear if we ask *whose* 'instant field of the present' we are considering. We answer, if we are not to prejudge experience it can not be declared either yours or mine—meaning by 'yours' and 'mine' content identified with particular association-groups and correlated with systemic neural activities of a particular organism. It *may* be either yours or mine so far as the pure experience goes, and this means that a really thoroughgoing empiricism should start from a practical monism in which the experience of the moment must, until it declares itself, pass for a 'common original stuff.' For just where the center of gravity of our given experience falls, whether without

¹⁴ Dr. Marshall's article, 'The Field of Inattention—The Self,' this JOURNAL, Vol. I., No. 15, pp. 393-400, only came to my notice after the completion of this paper. In consequence certain additions were made to the first part of my article, 'The Total Context of Transcendentalism,' which will shortly appear in this JOURNAL. And I there substitute 'self of attention' for the somewhat ambiguous term 'empirical self.'

¹⁵ 'Does Consciousness Exist?' p. 478.

¹⁶ *Ibid.*, p. 487.

¹⁷ *Ibid.*

or within the individual organism, we have no right to say. We only know that features of the 'given' become focal and objective for consciousness, and that the latter with its contents, so far as these become definite and definable, lends itself to interpretation in terms of special objective systems, physiological processes within an individual organism.

2. Thus radical empiricism is not quite radical enough. It tacitly assumes that the instant field of the present is individual only, and pluralistic at the outset; it builds up knowledge by means of conjunctive experiences, while consciousness, which to the transcendentalist is the real knower and always *more* than the particular self of attention, is by radical empiricism identified with one of its aspects, viz., the autobiography of the individual. Thus any experience 'tends to get counted twice over, figuring in one context as an object or field of objects, in another as a state of mind.'¹⁸ These two contexts are 'the reader's personal biography' and, in Professor James's illustration, 'the history of the house of which the room is part.'¹⁹

Now this accounts for the older copy theory. It enables me to say that the room, as percept, is in my particular consciousness (when I count it in with a certain context) and that, as physical fact, it also exists in a physical world outside me (when I count it in with another context); for it is the same object posing before different groups of experiences. But the being conscious of it, the fact that the experience is counted at all, is not explained. As the idealist would say, *who* does the counting? As I would prefer to say, is there not a neglected context by means of which the counting is done? Does it get itself counted? Then this only means that the object is taken up into the ideational context by way of the ordinary associative connections. But association, assimilation and the like are either special forms of *conscious* connection, in which case the reasoning seems to be circular, or the connection is physiological, perhaps ultimately mechanical. But the real problem of the transcendentalist whom radical empiricism opposes is just the problem of the connection in experience, and his answer is briefly: consciousness as subject, a mode of relationship. Let us turn, then, in the third place to the account which radical empiricism gives of conscious connections.

3. As consciousness has been identified with biography, and as this accounts for only one mode of knowing,²⁰ that by which an

¹⁸ *Ibid.*, p. 483.

¹⁹ *Ibid.*, p. 481.

²⁰ 'A World of Pure Experience,' this JOURNAL, Vol. I., No. 20, p. 538.

object is recognized as both 'in me' and 'outside me,'—other cognitive functions must be accounted for by the particular experiences themselves. The heart of the process is the matching of the prophetic idea with the percept by means of conjunctive experience. But what is matching? It seems indeed that it must not be taken in any literal sense. The 'flat piece of substantive experience' which at this moment, for example, constitutes my idea of the South Terminal Station in Boston is an ill-defined visual image which repeats so few details of the percept that the two could not even by courtesy be said to match, if placed side by side; and the case would be worse if my image were of some other sort—verbal, for instance.

Matching must therefore mean one of two things. Either the idea is at the instant *internally*²¹ representative, mirroring groups of experiences which I have had in the past, so that I can now substitute it for these, or matching means that the first idea is not literally prophetic, but is succeeded by others which are more and more adequate anticipations of the terminal percept.

It is the latter view which is favored by radical empiricism. Whenever such is the sequence of our experiences we may freely say that we had the terminal object in mind from the outset, though at the outset nothing was there but a flat piece of substantive experience. But each item in this train of conjunctive experience is in itself flat, substantive fact, not internally representative. How then are conceptual knowledge and the substitutional function of ideas explained? The answer is: these transitions are *felt*, and wherever they are felt 'the first experience knows the last one.'²² *Feeling* is, then, the bridge from experience to experience which enables radical empiricism to cross the 'epistemological chasm' and assert that conceptual knowledge is 'wholly constituted by things which fall outside the knowing experience itself.'²³ But feeling is after all only a mode of conscious connection, and the whole problem breaks out again. For consciousness is simply biography, and biography is again a particular tract of substantive experience.

The distinction²⁴ between 'virtual knowledge' and knowledge

²¹ I doubt if empiricism can ever get beyond this, the mirroring function of the parts of experience. I would not only say with Dr. Marshall that the self or attention is the simulacrum of the larger field, but that all our concepts, our percepts even, are simulacra of that undefined context. All are wholes and are representations, not only of defined contexts, but of undefined though limited margins.

²² *Ibid.*, p. 539.

²³ *Ibid.*, Part II., No. 21, p. 561.

²⁴ *Ibid.*

'verified and completed' does not seem to me to have a real bearing upon the *process* of knowing. It merely points the fact, which may readily be admitted, that knowledge is never really complete until a terminal percept verifies our idea about a thing. For the process itself we are referred to disjunctive experiences, bearing in themselves no 'transcendental' function, but dovetailed into one another, and thus made into conjunctions by means of feeling. I am aware that the objection, empirical conjunctions are still disjunctions, has been anticipated by Professor James in the articles under discussion. Nevertheless I feel that radical empiricism does not satisfactorily account for the relational experience, termed by him the 'co-conscious transition,' which is involved in the process of knowledge. We should not 'brand empirical unions as sham' merely because they are empirical; but I also believe that the transcendentalist had his own very real experience, although he substantialized and perhaps unwisely named it, and to this I shall turn in the next paper.

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THE ESTHETIC ATTITUDE¹

THE mainspring of life is action, functioning. Organisms react primarily in response to stimuli with directness. The fundamental cause we may ascribe to physicochemical conditions. A simple organism reacts with necessity upon the presentation of a stimulus. But each reaction leaves the organism with a certain *bias*, a tendency to react again in the same way, and this bias adheres and becomes more deep-rooted with each new presentation of a similar nature. This is the significance of memory, no other, the latent state of the organism after stimulation, the bias which it has acquired by means of such stimulation.

These reactions are of great import to the organism's welfare, for certain of them are life-giving, while others are life-destroying. As the organism is nourished and its functionings are of the sort which build up its structure, making a bias which resists harmful reactions, it lives and grows. On the contrary, as its structure is weakened, disintegrated, its bias is weakened; the organism breaks down before harmful stimuli, and death ensues.

As we move upward in the scale of life, where possibilities of reaction are more diversified, organs more differentiated, we find the functionings to be much more complicated, yet growing in inter-

¹Read in substance before the Western Philosophical Association, at Lincoln, Nebraska, April 21, 1905.

dependence on one another. The hereditary bias of physico-chemical nature is more expansive, permits of more subtle variation. The factor of selection due to such bias is more significant. And finally there comes a point where a certain retardation in the reaction is brought about by reason of the possibility of more than one reaction to a given stimulus. This retardation means a peculiar functioning of this memory of which we have spoken; it means that the organism reacts weakly along various paths which the stimulus may be adequate for innervating, and, as a result, positive action is inhibited, while these various paths fight it out, as it were, for supremacy. And here the factor of full consciousness as it is generally understood enters as an *internal reflection* of all these reverberations and tendencies of the organism.

Now, full consciousness depends on a central nervous system, a means of communication between various parts of the organism. In a simple unicellular organism there may, indeed, be the reaction, but it has no mental significance because it is direct and has but one meaning, that of itself. Mental significance enters only when a certain functioning takes place which involves a coordination or synthesis of other kinds of function. The sensation is thus interpreted in terms of other coordinate sensations.

But, aside from the significance thus imparted to the dominant action, there are conscious factors in the developed organism of a much more general type which attend functionings less differentiated, and, accordingly, never fully appreciated. These, we may say, go to form a background for our attentive states, a *subconscious* undercurrent, if you please, a something indefinable in its complete nature, yet no less manifestly present and important. It is this undercurrent which Marbe has so felicitously termed the *Bewusstseinslage*.

Now affective states may be adequately aroused by some object or group of objects. Yet these objects can only become effective in a definite way when they find the general bodily condition as expressed in the *Bewusstseinslage* conducive. Thus it is that our affective states are of such a strictly subjective nature, independent to a large degree of any combination of apperceptive factors. For affection means nothing other than a certain aspect of the total conscious state, one which may best be expressed in terms of conformity or non-conformity. We may then define it, perhaps, as the receptive and reactive state of the organism at any moment.

Viewing the affective state more narrowly, we find its functionings to be most complex. Yet just as the primitive organism's reactions were in general twofold, life-giving and life-destroying, so do these tendencies still adhere in the more highly diversified organism of man.

We are thus led naturally to judge of all conscious states by aid of a one-dimensional 'feeling' scale. This scale, however, reflects no more the simple directness of the primitive organism. The functionings which it attempts to correlate are too diverse, the combinations of mental factors too manifold for this. A distinctly unpleasant, non-conformable pain in one's foot may be accompanied by a sweet and wholesome taste in one's mouth. Yet some sort of affective state must always be present broad enough to embrace such conflicting functionings.

Affective states attach themselves primarily to action. It is the *doing* of things which we judge as pleasant or unpleasant. And so the animals may be conceived to experience just these fundamental affections, though without the ability to formulate verbal judgments on them. But the complicated functionings of the human mind lead, as we have already noted, to retardations which are filled out with all manner of mental reproductions which we call *thought*. In the child and primitive man such considerations refer to some action at hand or, at least, not very remote. In the adult there develops gradually an intellectual factor which attains an importance of itself alone. That is to say, we come to think not only for the sake of performing some act adequately, but at times for the mere sake of thinking! One can scarce judge this to be aught other than an artificial state of affairs, arising from artificial conditions of life which render it impracticable for a man to carry out his desires directly as they appear. Thus he comes to seek relief for this superimposed inhibition through thought; and the nature of this thought is to so systematize the knowledge of his experience that he may develop a bias which shall logically justify both his acts and his inertia.

Thought most commonly refers to some act more or less deferred, to circumstances which may arise demanding of action. Along with such thoughts go affective states which, interpreted, are the evidences of the conformity or non-conformity which these acts will arouse. Such is the nature of related feelings, ethical and utilitarian.

But there develops, too, an attitude which expresses the conformity or non-conformity of the present state without reference to aim or process. This I would name the esthetic attitude.

We find its elements in the more primitive organisms in the mere joy of healthy functioning. And even in the matured intellectual man there come moments of esthetic joy of this sort. But only for a brief interval, after which they are interrupted by a rush of associated ideas which prompt desire and demand action. These attributes of the simple senses, then, have but slight significance of themselves, but are more important in conditioning larger

effects. Simple beauty, as expressed by conformable lines, colors, sounds, odors, tastes, etc., is to the cultured mind merely a pre-determining factor for larger and more complete significance. The reason for the varying conformities of these simple sensation factors is more or less obscure. Certain definite effects of simple color and tone combinations which are pleasing to the normal observer, as compared with certain divergent effects which are displeasing, perhaps find their basis of conformity in physiological conditions which have been inherited. By far the larger mass of such differences, however, may be more satisfactorily referred, it seems to me, to associative factors and conditions of the *Bewusstseinslage* which experience has evolved, but which it may be difficult to trace out in detail.

A second set of esthetic feelings is afforded by the ridiculous, by wit and humor. We have here to do, in general, with a complex presentation which, starting out to depict some normal action, suddenly by means of exaggeration, incongruity or contrast, breaks down into a preposterous or absurd situation. Pleasure is derived from the conformity of comprehension together with the sudden knowledge that nothing of earnest endeavor is at stake. It is esthetic pleasure because of the fact that the conformity is without vital relations or purpose; it has no meaning beyond itself. The lack of earnestness takes the force from all its natural motives for action. However, since the start was made in such a way as one motivates action, a certain energy is pent up which finds involuntary outlet in laughter or smiling.

By far the most important and most permanent esthetic attitude is induced, not in any such transitory manner, but by certain factors which make a conformable mental state possessing a satisfying completeness well worth lingering over. And this state is one which always reveals to us the ideal essence in a situation. Thus we find relief from our constant toiling and eternal disappointment. Because in the highly differentiated human life the simplicity of action is lost and one can no more reach one's ends directly and take full joy in the process; because hindrances beset one's path and lead one into all sorts of devious and futile courses—therefore the mind is forced to evolve a system for its workings, to abstract from the concrete and draw an ideal conclusion to justify existence.

These ideals, more or less complete as they are, serve the very practical purpose of biasing and directing our actions. But they also possess in varying degrees a positive value as concrete mental states. The esthetic attitude is one which appreciates such an intellectual conformity. There should be, then, nothing in all of human experience toward which one can not maintain an esthetic

attitude. Nature in all the manifoldness of her stimuli, emotions in all degrees of violence, possess esthetic elements which, under favorable conditions, may be made dominant, and their attendant states appreciated with quiet and repose.

Those objects which contain the fullest and most direct esthetic significance are such as preclude most completely all motives for action and related judgments. This is the function of art: to produce works which in their mere nature shall be complete and satisfying to our ideal requirements. And the value of a work of art rests on a judgment of relative conformity with respect to such ideal requirements.

Any state of mind dominated by mental complexes which are free of desire and will, in which the mental state itself is valued without respect to related ideas prompting action or logical thought, is esthetic. It is the dominant note which determines the nature of the state, and the dominant note of the esthetic is distinctly contemplative. There is no essential difference or opposition in the factors which go to make up esthetic and non-esthetic states. The distinction lies in the manner of their functioning.

When a complex is conformable with respect to itself, without further promptings it may be termed esthetic. When it is conformable with respect to certain promptings for action or logical reasoning, it is a natural pleasurable state. When it is non-conformable it is both unpleasant and non-esthetic. It may prompt immediate action for purpose of relief, or it may lead to inhibition of action with melancholic tendencies, a practically quiescent state, but non-conformable and non-esthetic, since the dominant note is impotent desire.

The esthetic is always pleasurable in the sense that it denotes the ideal essence of something as a moment without further aim or end. The esthetic element in simple sense perception and in humor is pleasurable in the same general meaning which we give to normal action pleasures. But esthetic pleasure of the higher order is in a way distinct, since it may refer quite as well to the ideal essence in sorrow, pain, anger, resentment, scorn, hatred and other emotions which in their active moments are decidedly disagreeable, as to emotions of joy and contentment.

And this brings us at length to the value of the esthetic attitude.

Toward any complex situation in life we may adopt two general attitudes: the active and the contemplative. In so far as we are active we are either prompted to *do* something or to *think* something; to perform certain acts for the purpose of relieving ourselves or the situation, or to start certain reasoning processes with a similar aim. But we may also adopt a contemplative attitude toward the situa-

tion and thus appreciate it simply as a concrete experience. To be sure, a certain mental fitness is requisite for this esthetic mode of reception, and it may be that certain thought or bodily processes must first be gone through before the esthetic can be made the dominant note.

Were it not that certain situations must be met by an esthetic attitude in order to bring peace of mind, we should always be prompted, as indeed we always are at the start, to seek some mode of alleviation which an active, purposeful mind and body could produce. But very soon we learn in the rough school of life that no amount of desire or exertion of will suffices to bring back the departed friend, to rehabilitate the lost virtues, to obliterate wrongs done and pains inflicted. It is only in the cultivation of a true esthetic view-point that we may attain a salutary method for meeting such contingencies. For thus we are led in the course of much experiencing and much contemplating to adopt a broader bias, a fuller and more all-embracing attitude toward mundane affairs. And we come at length to view the whole panorama of events in a new and more objective light. There appears to us then a logic for every situation, a justification for every act. We evolve in some sense a practical world-view and the result to us who have attained it is a broader vision and a deeper insight. No longer need wrongs and pains pierce our weak flesh like so many barbed darts. We become able to sublimate them all, to *know* them, in a word, no more as mere uncompromising facts, but as natural, vital elements in a bigger whole, and all working in intimate reciprocal relationship with one another.

This, then, as I see it, is the real significance of the esthetic attitude. It is not confined to our pleasure in a work of art, a painting or a statue, a symphony or an opera, a poem or a drama; but may be attached to every concrete problem of the day, every secret thought and hidden trouble, the greatest joys and the deepest sorrows. Therefore, as we continue to struggle on let us thank the powers that be if an ever-increasing wisdom widens our view to the point that nothing shall be foreign to us nor any situation arise from which we can not discern something of that ideal essence which alone affords peace.

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REVIEWS AND ABSTRACTS OF LITERATURE

The Psychology of Beauty. ETHEL D. PUFFER. New York: Houghton, Mifflin and Co. 1905. Pp. vii + 286.

The chief purpose of the book is to present a theory of esthetics which shall effect a synthesis of the results of modern psychological research with some philosophical formula of beauty. The first chapter, 'Criticism and Esthetics,' separates the function of the esthetician from that of the critic by assigning to the esthetician for his aim a system of principles, to the critic, the analysis of a given work into its esthetic elements, and the judgment of it with reference to esthetic principles. Thus the critic must wait upon the formulations of the esthetician; not until esthetics has found out what is beautiful, and why it is so, may true criticism begin. The second chapter essays this task of the esthetician, 'The Nature of Beauty.' Beauty must be defined with reference to the end of beauty. If reconciliation of the warring elements of the universe is the end of beauty, then this must take place not *for* but *in* the *human personality*. This reconciliation must be not merely understood, but immediately and completely experienced. The subject should be not a mirror of perfection, but a state of perfection. Beauty does not simply 'express' something to the subject, but the beautiful object has qualities which bring the personality into a state of self-completeness or unity. This is the philosophical formula. Psychophysically such self-completeness is a combination of favorable stimulation with repose. Esthetic repose comes when stimulation, resulting in impulse to movement, is checked or compensated for by its antagonistic impulse, when inhibition of action, or action returning upon itself, is combined with heightened tone. This tension, equilibrium or balance of forces is the ultimate nature of organic life. Perfect equilibrium, equilibrium with heightened tone, gives the perfect or esthetic moment. The esthetic state is, psychologically, a unique emotion parallel to joy, fear, anger. The positive toning of this emotion—what is called esthetic pleasure—is due not only to favorable stimulation, but also to the fact that the antagonism of impulses which constitutes repose heightens the tone of our experience while it inhibits action. A third chapter, on 'The Esthetic Repose,' is in large part descriptive of states allied to the esthetic, in particular the state of religious ecstasy. It is found that in many states of most intense emotional experience, religious, esthetic, intellectual, the sense of personality slips utterly away. This feeling of personality resolves itself into the feelings of motor adjustments, and the loss of these feelings is an essential characteristic of the esthetic experience. This is absorption in the object.

There follow chapters on 'The Beauty of Fine Art,' 'The Beauty of Music,' 'The Beauty of Literature,' 'The Nature of the Emotions of the Drama' and finally 'The Beauty of Ideas.' These aim to expand, test and confirm the above thesis. In the beauty of fine art, as to color: complementaries, particularly if contrasted in brightness and saturation, are

pleasing in their mutual enhancement. The eye fatigued with yellow sees blue, so if the blue is really given in the picture this makes for beauty because it meets the demand of the eye. This is favorable stimulation. After color, the beauty of visual form: since there exists an instinctive tendency to imitate visual forms by motor impulses, the form which would seem most in harmony with the responses of a bilateral organism is the symmetrical. However, many apparently non-symmetrical arrangements of space are felt as pleasing. In these we may find a hidden symmetry, the elements in such arrangements tending to bring about the bilateral type of motor response which is characteristic of geometrical symmetry, *i. e.*, as translated into imitative motor responses, such pictures are equal in symmetry to a literal geometrical symmetry. If the expenditure of attention is equal on the two sides of a picture, we may be said to have in it this substitutional symmetry. An analysis of space-composition among the old masters reveals a balancing of items in accord with the above principle. For example, portraits in which the head is not in the center of the canvas will be found to have the 'direction of line' and of attention toward the side opposite from the head. Thus the 'mass' and 'interest' of the picture are on one side of the mid-line, while a glance or gesture is directed to the opposite side, where perhaps a vista may also be found in the background. Among various kinds of composition the pyramidal type is of special interest. In this type, observed in altar-pieces, Madonnas enthroned, adorations, etc., the central figure forms the apex of a triangle or pyramid. The relation between the broad base and the apex gives a feeling of solidity and equilibrium, and, it is proposed, the tendency to rest the eyes above the center of the picture directly induces the mood of reverence or worship. This type expresses the highest degree of quietude, contemplation and concentration. Other types, the V-shaped and the diagonal, belong to pictures of an 'active' nature, the diagonals allowing more freedom in the sweep of the lines, and hence in the suggested motor responses, than is the case with the pyramidal type. In conclusion, a picture composed in substitutional symmetry is more rich in its suggestions of motor impulses and thus more beautiful than an example of geometrical symmetry.

Chapter V. discusses 'The Beauty of Music.' The two great factors of music are rhythm and tone-sensation. The 'demand' of the organism for rhythm is exemplified in the facts of subjective rhythming or the fluctuation of attention. The objective stress in rhythm is emphasis on a stress which would in any case be to some degree subjectively supplied. Rhythm is then a favorable stimulation. The sense of equilibrium in rhythm is justified by the fact that a rhythm has both a retrospective and a prospective reference. It binds together the first and last moments of an activity. The particularly close connection known to exist between sound and movement explains why the rhythm of music is so supremely affecting. The striking fact of modern music is the principle of tonality. Every tone is felt as something at a certain distance from, with a certain relation to, another tone which is dimly imagined. The tonic, then, gives

the sense of rest of equilibrium, or finality; it is the epitome of all the most perfect feelings of consonance or unity which are possible in any particular tone-sequence. It is, therefore, the goal or resting-place after an excursion. Tone-sequence in rhythm gives melody. It is in the nature of melody that one note implies another, and we may understand a melody as always tending with various degrees of urgency to its tonic. Music is a phenomenon of expectation, expressing and causing tension, strain and yearning. What, then, is the emotion which the satisfaction of this longing arouses? The answer to this question is the point to the whole discussion of musical beauty. The author offers that the fundamental facts of musical experience are supremely fitted to bring about the illusion of a triumphant will. Volition is the imaging of a movement or action followed by feelings of strain and then by the feeling of the movement carried out. Anticipation is the essence of it. When image, effort, success are vividly present we have the feeling of triumphant will. Music by its intrinsic nature creates in us the illusion of a triumphant will. Finally, melody as a set of implications is as essentially timeless as a picture, and in it, too, there is given the unity and completeness of the perfect moment.

Literature is the art whose material is life itself. The beauty of literature is measured by its power to give us perfectly the sense of life. The varieties of literature have each their peculiar excellences. One of these varieties is treated at length in the chapter on 'The Nature of the Emotions of the Drama.' The spectator at a play finds himself in an artificially arranged situation. All tendency to act with respect to his surroundings is checked, he can not help or hinder the actors, but there is thereby induced in him a vivid reproduction of ideas. He is freed from the necessity of taking action, and may be impressed by every element in the play. A drama contains at least two actors, these usually in conflict. The spectator, unable to take both sides at once, that is, to follow out at once motor suggestions of an opposite character, finds his emotional impulses checking one another. The typical dramatic moment occurs in the simultaneous realization of two opposing forces. The emotion of tragedy—the katharsis—is this emotion of repose through tension. In both tragedy and comedy there is collision or conflict. When there is no way out, we have tragedy; when there is a way out, comedy. The concluding chapter on 'The Beauty of Ideas' gives this: in so far as we accept the moral idea which a work of art presents, in so far that idea has the power of bringing us to a state of harmony, and in so far it is beautiful. The nature of the esthetic experience in the realm of ideas is a quietude of the will in the acceptance of the given moral attitude for the whole scheme of life.

Such is the general purport of the book. Its systematic aim and the manner of its execution will recommend it in particular to two classes of persons—to the general reader, who will find only a small part of the work exclusively technical, and to the college student. Supplemented by the instructor, the book is well suited for class work. The references to the

literature of the various fields surveyed are stimulating without being oppressive, the criticism of popular theories is neat, and in style the book has a very positive charm.

In regard to the author's central thesis one can not but feel that, in spite of the interesting and forceful presentation, some points would bear fuller elucidation. Indeed, the very criterion of esthetic emotion seems not perfectly plain. It is true that esthetic emotion is caused by the mutual checking of impulses, that it arises when action is inhibited by balance among the forces of action, but is this differential—is it peculiar to esthetic experience? It seems to be rather the condition of any emotional experience whatsoever. In anger, for example, action may be checked by the very multiplicity of revenges which suggest themselves, so that here, too, we have inhibition or tension with heightened tone. Nor, again, is the esthetic balance clearly discriminated from that other balance which we call deliberation. Tension is as surely the occasion for the reflective, deliberative moment as it is for the esthetic.

But even admitting such objections to hold, one would not find the value of the work appreciably diminished; for the items which give the book worth are its special analyses in the various realms of beauty, the critical treatment of illustrative matter, the discriminating summaries of current discussions and the report of the author's original researches in the field of visual beauty.

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A Study in Precocity and Prematuration. LEWIS M. TERMAN. *American Journal of Psychology*, April, 1905, pp. 145-183.

The author starts from the general conception that infancy means delayed development through which greater effectiveness in maturity is gained. Early maturity, he believes, means early cessation of the power to learn and hence arrested development. Prematuration exists when this early development is forced by external pressure. Education tends to become pressure and to bring about prematuration, *i. e.*, arrested development. Hence the greatest care should be exercised to avoid this result.

While the author disclaims the pretension of offering a scientific proof of his thesis, a mass of evidence of various kinds is brought to its support. The general conception, that the more intelligent the race the more prolonged the period of infancy, is supported by many facts drawn from zoology and anthropology. Precocity is shown to be common among criminals, and many cases where throwing the child on its own resources has led to a superficial maturity and to crime are cited. Premature development of religious feeling and speculation is considered, and the consequences are found to be morbidity, superficiality and cynical skepticism in religious matters. Precocity is shown to be frequently an accompaniment of mental and emotional unbalance, as in the case of the one-sided genius. Most precocious children are declared to be nervously morbid. Sexual precocity is treated at length, and its evils are noted. It is held to be encouraged by the conditions that civilization has produced, being

more common in the city than in the country, and induced by rich food, exciting life, etc.

It would seem to me likely that the establishment of fixed habits of thinking and acting on matters which in the adult should be governed by mature considerations would lead to arrested development. Since the original motives are of necessity superficial ones, any habit that tends to give them mastery must inevitably promote superficiality and narrowness. On the other hand, there are any number of useful habits the formation of which need not imperil the intellectual or volitional development of the child. There is nothing sacramental about the immaturity of infancy. I can see no advantage in it save that it means that habits possibly objectionable have not been inherited. Its function is negative rather than positive. It affords an uncultivated field to the individual, so that his powers of adaptation may have full opportunity to take advantage of experience without decisive control by heredity. The man is freed from slavery to the race. Education should, indeed, not make haste to forge anew the chains of the individual. But herein lies the difference between modern liberal education and that of early civilizations. It seeks to encourage independence, to develop reliance upon reason. To force a child to the pretense of reasoning where he is as yet incapable of such an act is, indeed, premature and provocative of arrested development. But an education that teaches a child to reason is taking advantage of the function of infancy. Our schools are more and more tending to deal with the child in good faith, giving him what he can take and what he needs, and avoiding temporary expedients and artificialities. The ideal is and should be the greatest economy in growth consistent with happy childhood.

Again, education that forces a child at the expense of health may well lead to a precocity that is accompanied by nervousness, unbalance and all sorts of physical and mental disorders. These consequences are, however, entirely distinct from that of arrested development through habits formed too early. The difficulty is not prematuration, but overexertion. On the other hand, a one-sided prematuration, such as would lead to intellectual precocity without moral insight and strength, might easily result in vice or crime. However, the school, as we know it, is certainly struggling against such partial and deplorable results as these.

On the whole, I should think that Mr. Terman's study, while rich in material and in suggestiveness, has not established any new general facts concerning the significance of precocity or prematuration. Nor has it given us a clear criticism of our present educational methods. As scientific investigation, the generalizations lack finality; as educational criticism, the points are too indefinite.

E. N. HENDERSON.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK, May, 1905, Band 126, Heft 1. *Das Verhältniss des Fühlens, des Begehrens und des Wollens zum Vorstellen und Bewusstsein (Schluss)* (pp. 1-29): J. BERGMANN. - Desire is not feeling, but a species of idea, distinguished by the fact that it implies both a desire for (or repulsion from) an object and at the same time for the present state of desire (or repulsion). Will differs from desire in that its goal is never mere pleasure, but always the perfection of some given imperfect thing, so that it may seek the good of others without reference to that of the willer. *Die Einfühlung und das Symbol* (pp. 29-44): R. M. WERNAER. - In opposition to Lipps it is urged that to the esthetic symbol there belongs not only a sensible figure with a spiritual import united in a material object, but also an incommensurability between this form and meaning, with a consciousness of their diversity. Illustrations from works of art are advanced in support. *Zur Verteidigung des Pantheismus Eduard von Hartmanns* (pp. 44-60): A. KORWAN. - A detailed refutation of Karl Andresen's recent attack, giving special attention to the conceivability of the development of a God, both rational and definitely volitional from a condition possessing neither of these characters. The appearance of chance in the world offers no difficulty to Hartmann's doctrine of the final cause. *Recensionen* (pp. 61-100), including: H. Rickert, *Die Grenzen der naturwissenschaftlichen Begriffsbildung. Zweite Hälfte*: A. GROTENFELT. J. Goldfriedrich, *Die historische Ideenlehre in Deutschland*: L. RIESS. L. Koenigsberger, *Hermann v. Helmholtz*: N. ISSERLIN. Baumker und v. Hertling, *Beiträge zur Geschichte der Philosophie des Mittelalters*: H. SIEBECK. F. Medicus, *Kants Philosophie der Geschichte*: O. SCHONDORFER. A. Kuhtmann, *Maine de Biran*: E. KÖNIG. K. Vorlander, *Geschichte der Philosophie*: A. MESSER. L. Woltmann, *Politische Anthropologie*: H. REICHEL. J. Unold, *Die höchsten Kulturaufgaben der modernen Staates*: A. GROTENFELDT. *Erwiderung und Bemerkung. Selbstanzeige. Notizen: Neu eingegangene Schriften; Aus Zeitschriften.*

KANTSTUDIEN. May, 1905. Band X., Heft 3. *Ein Gemälde Schillers. In Schillers Garten (Ein Gedicht)* (pp. 240-252): O. LIEBMAN. *Was können wir heute aus Schiller gewinnen?* (pp. 253-260): R. EUCKEN. - Schiller stands for an exaltation of spirit above the reach of petty cares, and for an energy of mind and fixity of purpose that doubt could not assail. *Schiller als theoretischer Philosoph* (pp. 26-286): F. A. SCHMID. - Schiller was a great personality rather than a theoretical philosopher. *Das kantische Element in Goethe's Weltanschauung* (pp. 286-346): J. COHN. - Goethe was not a Kantian, but took from Schiller Kant's general position, until in his later life he learned directly from Kant to look no less on the knowing subject than upon nature, the object of man's knowledge. *Schiller und die Idee der Freiheit* (pp. 346-373): B. BAUCH. *Zwei Quellenfunde zu Schillers philosophischer Entwicklung*

(pp. 373-390): H. VAHINGER. *Karl Rosenkranz über Schiller* (pp. 390-392): M. RUNZE. *Schillers letztes Bildniss* (pp. 392-396): F. A. SCHMID. *Das Schiller Porträt von Gerhard von Kugelgen* (pp. 396-398): H. VAHINGER. *Schillers transzendentaler Idealismus* (pp. 398-412): W. WINDELBAND. - With Schiller as with Kant the ultimate result of their transcendental idealism was the conception of human history as separate from the history of nature, that is, as free, self-determining. *Kant und Schiller, ein Gedicht* (pp. 412-414): T. KLEIN. *Mitteilung*.

Croce, B. *Aesthetik als Wissenschaft des Ausdrucks und allgemeine Linguistik*. Aus d. Italienischen übers. v. K. Federn. Leipzig: E. U. Siemann. 1905. 8vo. 7 M.

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Jerusalem, W. *Der kritische Idealismus und die reine Logik*. Wien: Braumüller. 1905. 8vo. 6 Kr.

Jerusalem, W. *Gedanken und Denker. Gesammelte Aufsätze*. Wien: Braumüller. 1905. 8vo. 6 Kr.

Mallik, M. C. *The Problem of Existence: The Mystery, Struggle and Comfort in the Light of Aryan Wisdom*. London: T. Fisher Unwin. 1905. 10s. 6d.

NOTES AND NEWS

THE Sixth International Congress of Psychology will be held at Geneva in 1909. The following committee is in charge of the arrangements: president, Professor Flournoy; vice-president, Dr. Ladame; general secretary, Dr. Claparède.

MR. W. R. SORLEY, M.A., of King's College, Cambridge, Knightbridge professor of moral philosophy, has been approved by the general board of studies for the degree of doctor in letters.

THE Fifteenth Congress of French Alienists and Neurologists will meet this year at Rennes, from the 1st to the 7th of August, under the presidency of Dr. Giraud.

IN the convocation of Oxford University held on July 10, the degree D.Litt., *honoris causa* was conferred on President Nicholas Murray Butler, of Columbia University.

PROFESSOR J. MARK BALDWIN, of the Johns Hopkins University, is giving a course of lectures on psychology in the summer school of the University of California.

PROFESSOR H. H. HORNE, of Dartmouth College, has been appointed professor of philosophy in that institution.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE TOTAL CONTEXT OF TRANSCENDENTALISM

I

IN my paper on "A Neglected 'Context' in 'Radical Empiricism'"¹ it was assumed with the latter that for our present philosophy, at any rate, the former dualism of 'thought' and 'thing' can no longer hold, that entities must give way to empirical relationships, or, in other terms, must be given their contextual equivalents in experience. However, it was objected that radical empiricism wrongly identifies consciousness with a special context. It was then suggested that we make the attempt to supply the experiential equivalent of the transcendentalist's position, seemingly so much at variance with an empirical philosophy.

Let us begin *ab ovo* by noting the difference between an object thought of as thing, process, or event in the outer world, and the same object thought of as experienced 'in consciousness.' To illustrate the first, the ink-stand upon my desk was for me a moment ago hardly more than a 'mere' that, yet certain things were noted as belonging to it—form, color and some of its spatial relations to other objects. This group or special context of objects, with reference to which the object of attention gets its momentary empirical character, is a system of limited but homogeneous qualities and relations, homogeneous inasmuch as all are in one context, and so, together with the thing, felt by me to exist in a physical universe. I can extend this system of relationships practically at will while preserving, nevertheless, its homogeneous character. Besides the immediate and obvious qualities of color or form I can add weight, density, capacity for absorbing or reflecting light, atomic constitution, etc. To be sure, I could not thus extend the context without passing almost immediately from the sensuously 'real' to the 'ideal,' but that is a matter of no moment here, since for us ideas and things are merely empirically distinct classes of experiences.

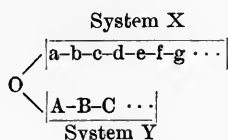
Now as long as the object continues to fit in and cohere with the contexts with reference to which it is known, consciousness and con-

¹THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. II., No. 15, p. 400.

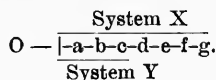
text are one, and our state is one of pure object-mindedness. If for convenience we limit the contents of the momentary experience to a very few objects, ink-stand (object of attention), weight (recognized property), percept of desk and images of earth, moon, body (context), the new item of knowledge, 'weight' is taken to be the equivalent, substitute or representative of this defining context, and the latter is the empirical 'subject' of the experience. Unless we are explicitly conscious of self as a trend of particular memories, etc.—a thing which happens more often in our social relations with our fellow men—the subject is simply *the defining context*. Now ordinarily we say that, although the object is characterized by means of these contexts, the former is 'in' or 'present to consciousness.' However, besides the object and the emphatic context there is nothing in the experience of the moment but the indefinite fringes or unused associable material. As, therefore, we are to abandon the notion of consciousness as an entity, and as it seems impossible to identify it with a special context, we must, I believe, find in the fringes the explanation. Accordingly, *the thought that this Total Context comprising the neglected experiences, constitutes a system which would be pertinent in the final definition of the object is the thought of the object as in or present to consciousness, and consciousness itself arises through the fact that there are two possible subjects or subject-contexts in any experience to which the object may be referred.* One of these is the special context which defines the object, giving to it its specific character; the other is the Total Context which defines it only as object of 'consciousness.' The Total Context with its changing content, a system to which any and every object or relation may or, as the idealist says, must be referred, is 'consciousness.' If the reference is not made, *i. e.*, if the object is not counted with the larger context, so far as the present experience goes we and the objects we think or feel are one; if the object gets presented also to the Total Context, consciousness is concerned. If the Total Context is thought of as within the span of a new system we are aware that we are conscious, that is, we are self-conscious. From this point of view consciousness and self-consciousness are essentially one, self-consciousness being merely the explicit recognition of the Total Context as a primary defining system or ultimate subject of the experience.

Let us call the latter system X, representing its contents (ill-defined objects, real or ideal, together with masses of organic sensation and feeling) by the symbols a—b—c—d—e—f—g, etc. If, further, we call the object O, and by A—B—C denote the special context (or, let us say, system Y), which is more or less within the field of attention, and by which the object acquires its definite char-

acter, the above conception of consciousness will take a form somewhat like this:



in which A—B—C are emphasized portions of system X. In this case we have a system within a system represented by



Borrowing features from Dr. Marshall's diagrams,² we may represent the given experience of the moment as in Fig. 1, where ● = clearly defined, and O = undefined.

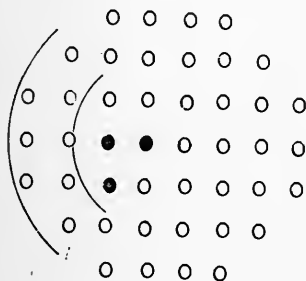


FIG. 1.

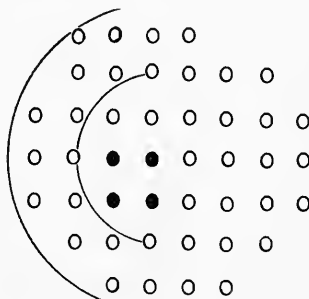


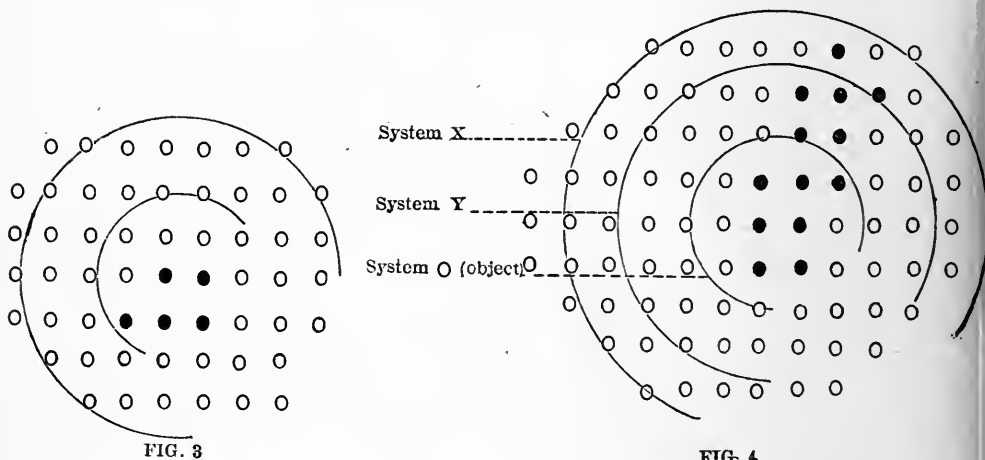
FIG. 2

In Fig. 2, a group of elements is becoming focal as an object, although it has as yet no definite character, remaining a mere 'that,' which is here represented by the arcs partially enclosing emphatic elements with their contiguous circles or associates. In proportion, however, as the object appears in consciousness as a definite thing with properties and relations, it is no longer confused with the other contents of consciousness, but is definitely a whole in contrast with the defining context, as in Fig. 3. Finally, consciousness would be a function of the relation which obtains between the object and the enclosing systems, the marginal elements outside system Y now in their turn constituting the larger system X, as in Fig. 4. The object, when counted in with system Y, acquires further specific character, which is, of course, dependent upon this context; but, if it is also counted with system X, it is 'present in consciousness,' the ultimate subject of any experience.

² 'The Field of Inattention—The Self,' THE JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. I., No. 15, pp. 394 ff.

In the above diagrams the circles, which represent systemic content, should never be more than arcs of different curvature, for the reason that no one of these systems is ever complete. Not only is the Total Context never complete, but the defining context, in spite of its clearly marked systemic character, is never sharply to be distinguished from the envining contexts of marginal content, while finally the object itself is always felt to be more than it appears as mere presentation.

If now we consider for a moment the nature of conception and judgment, we shall find, I think, suggestion for the view that any definite experience in which the 'feeling of wholeness' is predomi-



nant derives this character from the fact that it is a minor representation which repeats in essential features the Total Context. The concept, which may be structurally a generalized or particular image, functionally represents groups of experiences and is, therefore, treated as substitutional. But these contexts of which the concept is functionally representative include wide tracts of undifferentiated content. Does not its dynamic power--the feeling that although we have grasped the meaning of our image and found it in some sense a whole, it nevertheless reaches forward to other relations with other content--does not this arise from the fact that it is a minor system which repeats the essential characteristics of the Total Context with its broader margins? It is the envining 'fringe' which constitutes the representative aspect of the concept, and the 'pull of the fringe' which is 'relational feeling.' In judgment also we are under the control of an ideal complex or system of which subject and predicate are momentarily regarded as aspects, and with refer-

ence to which the relation is affirmed or denied. Thus, if there is truth in the above suggestions, the foregoing processes from the ideal complex which accompanies judgment—and reasoning—to the percept itself appear as variations of the Total Complex, the variations being due to the predominance of this or that class of sensations, the extent of the marginal field included within the system, the special contexts which enter into it, etc., while the Total Context appears as the fundamental, determines the form or furnishes the 'pattern' for the minor systems.

We may now turn to some prominent characteristics of the Total Context. First, in so far as we are 'conscious' it is not simply a fringe, but in some sort a system, for it subordinates all other relations to itself; at least we think of it as making a difference to the object, all the difference there is between thing and consciousness of a thing. Second, as regards content, the Total Context does not differ from the minor systems. If the percept and images in the previous illustration served somehow to bring to mind the recognition of 'weight,' then another object, say the thought of Mars or Venus, although homogeneous with the others, since the objects are implied in a physical system of mutually attracting bodies, is, if excluded from the defining context, referred to another universe, a universe of undefined relationships which puts all the difference between the physical and the conscious. In the experience of the moment let but one element remain undefined, neglected and forgotten, it defines itself by means of a larger system, making its law known to you in your recognition that the object with its property *is*, but that you are *conscious* of it. Consciousness is the very quintessence of scepticism, for the Total Context, when you neglect it, comes back upon you with the assertion: I and I only am the genuine subject of any experience, the original and natural world order by means of which your object must ultimately be defined. Your defining context is partial and artificial; your object as characterized by it is, therefore, not the object as it is. Thus a third characteristic of the Total Context is its essentially purposive character. Particular association groups represent to a greater or less degree habitual lines of reaction with reference to the object, while purpose, as synonymous with end, is simply developed consciousness, the more than commonly persistent grasp of this Total Context in the form of defining system, while its content remains for the most part in the field of inattention.

The chief systemic characteristic of the latter is the simultaneity, the togetherness in time of its constituent objects, or, as I shall say here, their timeless unity. Since its content is made up largely of relatively persistent groups of organic sensations, its form changes

slowly when compared with particular association groups. As now we have assumed that consciousness means the presence of the object to two systems of experiences, the one a partial, the other a Total Context, and as we may further suppose that, viewed temporally, the contents of these systems have differing rates of change,³ certain elements will always be common to both, and these elements, counted in with both systems, will constitute the felt identity and timelessness of consciousness. Thus the subject of any experience is always felt to be timeless, as subject, the object temporal and changing, while, if the former is itself made object, its contents are felt to flow.

Thus far we have been concerned with consciousness as subject or unity in experience. It is the 'I think' which Kant said must be able to accompany all my objects and to which Professor James devotes a few lines, dismissing it as the 'I breathe, which actually does accompany them.' It means simply objects, but objects in a unique relationship, which, as I believe idealism rightly claims, is the type after which we pattern all other relations. If now we abandon the entity concept and the metaphysical separation of ideal from real, terms such as 'subject,' 'transcendental ego' and the like, serve only to mark off this unique though empirical relationship from all other forms, mechanical, chemical or what not, which enter into our experience. Thus the idealist and transcendentalist lose their subjectivism. The issue is now between competing types of equally objective relationship, and the problem of idealism *versus* opposing mechanicalistic systems becomes: shall the world which we conclude to call real be interpreted in terms of system X or system Y, the one termed 'conscious,' the other 'mechanical'? Leaving this larger question as foreign to our inquiry here, we may return to the conception of the self of attention which radical empiricism identified with consciousness.

II

THE TOTAL CONTEXT AND THE INDIVIDUAL CONSCIOUSNESS

It is evident that the term 'my consciousness' is ambiguous, comprehending as it does two concepts which represent disparate systems of objective content, for the 'my' signifies 'biography,' 'consciousness' a function present when the object is counted with system X. My *consciousness*, as knower, or subject, is system X, a relation in and of things; *my* consciousness is 'a particular series of experiences run together by certain definite transitions,⁴ memories, opin-

³ Which does not mean necessarily that time has an independent reality. That time itself is meaningless apart from the timeless I have endeavored to show in 'An Interpretation of Some Aspects of the Self,' *Philosophical Review*, Vol. XII., No. 1.

⁴ Professor James's definition of 'a mind.' This JOURNAL, Vol. I., No. 21, p. 566.

ions, percepts, identified with a particular material organism. The two, subject and biography, are not necessarily identical. How then do they come to be identified? Why is it that instead of regarding consciousness as a type of relationship present in things, we assign to it a purely subjective function, identifying it with the conceptual self of the individual, contrasting it with spatial, mechanical and all other forms of relationship in a supposedly alien material world? It seems to me that this admits of two answers, the first ethical, the second psychological. First, in so far as the larger purposive system of the present experience is felt to be the outcome, continuation and fulfillment of incidents, plans, purposes which I have owned as part of my particular self, I as an individual and this Total Context are genuinely one. As one may step from the ground upon moving steps or upon a moving sidewalk, becoming part of a particular mechanical system, so the individual may, through the adoption of purposes, felt to be the continuation of his past self, identify himself as an individual with the present purposive context, becoming part of an objective system. In the second place, the Total Context and the 'biography' of the individual *look alike* and are, therefore, treated as one. For those objects, whether percepts or ideas, which make up the fringe of neglected content, are in all respects like those other ideal objects which form the self-group. The former, just because attention has neglected them, are vague and indefinite, and thus readily commingle with the self-group which is comprised chiefly of ideational content and is, furthermore, the most persistent of association-groups. Hence the fringe of the larger system is always vaguely felt to be a continuation of *my* self, and consciousness is mistakenly conceived to be a purely subjective form of relationship. Consequent upon this misconception is, I believe, our ordinary failure to recognize purpose as a category applicable to those groups of experiences, actual and possible, which constitute the system of external nature; but a discussion of this is obviously impossible here. In its stead, however, a word may be said in conclusion. If we may suppose that the transcendentalist had a genuine experience, and if we could interpret this in conformity with present knowledge of the structural content of entities which have had their day and are passing, Kant's Copernican change would really be the analogue of the great astronomer's physical standpoint. For it would then appear, not that objects conform to the intuitions and categories of an inscrutable inner self, but that all objects, ourselves included, conform to a type of objective relationship termed 'subject' and 'consciousness,' which we treat substantively as 'inner,'

and for practical and methodological purposes correlate with physical processes having determinate connections of their own.

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A FUNCTIONAL VIEW OF NATURE AS SEEN BY A BIOLOGIST¹

THE following outline makes no claim to originality of treatment. It represents merely the attempt of a naturalist without philosophical training to formulate in his own vernacular certain current philosophical views in form suited to the practical requirements of his own scientific thinking. Terms are used as far as possible in the ordinary untechnical sense with no attempt to conform them to the historical usages of metaphysics. The obvious impossibility of eliminating traditional philosophical implications surely need not deter us from the attempt to do so!

We are accustomed to say that all things which constitute the materials of physical science are known to us only through their properties, *i. e.*, their behavior. It would accord more directly with experience to say that the behavior is the thing so far as known. Any substance back of the behavior is a postulate which certainly has not the merit of inductive proof. The new physics and the new chemistry (the boundary between them is breaking down) are coming to dynamic forms of statement, and Ostwald even goes so far as to affirm that the concept of the atom as brute matter is a metaphysical perversion which has exerted a most mischievous depressing influence on the progress of science. And certainly, in the organic realm, the higher we go in the scale the more clearly does function or behavior stand out as the criterion of our definitions.

That things do not exist apart from their function or behavior is a conception which possibly will not commend itself at first blush to students of physical science, though it is one of the fundamentals of biology. Our customary definition of protoplasm as living substance, for example, is a case in point. Dead protoplasm is a contradiction of terms. It ceases to be protoplasm as soon as the distinctively vital modes of function are replaced by others. This is easily recognized because the vital modes are constructive and conservative, while the inorganic modes which replace them upon the death of the organism are destructive agencies, so that a change

¹ Read before the Philosophical Club of the Ohio State University, January 16, 1905.

from one mode to the other is signalized by an obvious change in the static aspect of the thing.

But reflection shows that the same is true of any mechanism, if definitions are pushed to close limits. The function of a watch is to keep time. If it fails in this it is not a watch, though it may have most of the necessary elements of a time-piece. Obviously the mainspring is not the watch, nor is all the rest of the mechanism without the mainspring a watch. The loss of any element essential to the performance of the function of keeping time destroys its value as a watch.

Or, take a simpler illustration. I blow a soap bubble. It drifts past on the breeze, hangs glittering for an instant and bursts. As it poises before me it may be taken as a type of an object. But *what* is it? What does it mean? Its spherical form, quivering iridescence and undulating trajectory—these speak eloquently to the physicist of molar and intermolecular forces in delicate balance and of a long chain of antecedent transformations of energy. Let the balance of these activities be suddenly disturbed at any point in the system, and the object vanishes instantly.²

We have no experience of absolutely passive existence. All that we know can be expressed in terms of action and reaction. My brother has stated it in these words: "The energists claim . . . that substantiality is expressed by relation among activities. Activities are positive realities whenever they are shown to belong together. The bringing together is the substantiality sought, and to seek further is illogical. A relation is a real thing and expresses a law of organization. The organization is the organism" ('The Passing of Scientific Materialism,' *Monist*, January, 1905).

It is perhaps conceivable that activities might 'belong together' in perfect frictionless equilibrium. Our experience, however, gives no instance of such a perfect equilibrium; but rather of correlated action and reaction, a continuous disturbance of equilibrium with readjustment.

Our vocabulary contains no single term which designates this essential feature of things. The word *object* implies only the static

² James brings out very clearly ('Psychology,' Vol. II., p. 334) the relation between the so-called real essence of things and their properties in these words: "Readers brought up on Popular Science may think that the molecular structure of things is their real essence in an absolute sense, and that water is H-O-H more deeply and truly than it is a solvent of sugar or a slaker of thirst. Not a whit! It is *all* of these things with equal reality, and the only reason why *for the chemist* it is H-O-H primarily, and only secondarily the other things, is that *for his purpose of deduction and compendious definition* the H-O-H aspect of it is the more useful one to bear in mind."

or inertial aspect. *Action*, on the other hand, as generally used, ignores this aspect. But as a matter of fact all action does present, when viewed in its entirety, the element of reaction, of resistance, of stasis. We know no 'pure energy' in science, and as in the course of this discussion we use the dynamic terms, action, function, behavior, etc., they must be understood as carrying this enlarged connotation.

All finite activities, therefore, are of the nature of movement against resistance or under tension. This perfectly general statement is inductively arrived at. It is the most general formula of reality at present possible. This movement is not always of the same mode, or form of energy, and our concepts (and especially our language) are all in terms of single modes, so that the pursuit of the discussion in terms of general formulæ is difficult, if not impossible. Accordingly, we shall frame our statement in terms of one of the simpler modes (mechanics) and endeavor later to illustrate the application of this formula to other types of existence.

Every finite existence may be said to involve a polarizing of being into a focal point or center (which is not fixed, but progressively changing its character and trend) and a *relatively* more fixed field throughout which the energy involved plays (and which to this extent at least must be active). The thing existing is not the focus nor the field, but the total situation.³

Things are defined by the character of their manifestations of energy, and this, in turn, is determined by two factors: (1) the intrinsic form or trend of the central or focal factor (determined largely, if not wholly, by past modes) and (2) the extent and character of the field involved, *i. e.*, the nature of the resistance overcome during the movement.

In the nature of the case we can not regard either focus or field as absolutely fixed, but must go back to the ancient doctrine that all things are in a state of flux. But the fluidity is not perfect (*i. e.*, we have nothing in nature corresponding to the metaphysical doctrine of pure being), and the sphere of resistance which any concrete activity meets is its 'field.' From the point of view of this thing the field is relatively fixed, though it may be as labile as you choose when viewed otherwise. So the 'focus' of this activity may lie in the 'field' of some other. The figure, of course, is very gross and must not be pushed far. Perhaps the meaning will come out more clearly in the application to the higher types of beings.

³ Nor is it the realizing in my consciousness of the situation. The thing, in one of its aspects, is the modality of energy, and, from another point of view, may be the *form* of experience. Or, more explicitly stated, we take our departure in this inquiry from a realistic standpoint as contrasted with that of subjective idealism.

The situation as thus defined may be looked at in various ways, of which two require more special treatment. (1) It may be viewed in longitudinal section, *i. e.*, as taking place in time. Here the running sequence, the fluidity, brings into strong relief the dynamic elements, and we see the process as *function*. (2) It may be viewed in cross section, *i. e.*, as extended in space. Eliminating the temporal factor, as in an instantaneous photograph, the static elements more clearly appear and we term it an *object*, a *structure*.

It must be noted that the thing under consideration is neither the structure nor the function, though it is both. This distinction does not exist in reality; it is artificially produced in our attempt at analysis. But the artifact is a necessity by reason of the limitations of thought and of language.

It may be objected by the philosophers that in such a methodological analysis of experience as we are here attempting the concepts of time and space are out of place. This may be true, and it is freely admitted that the figures of the longitudinal and cross sections must not be treated as ultimate conceptions. But these concepts of time and space are very useful as tools of scientific research and it must be left to the philosophically inclined to formulate the distinction between function and structure in more general terms. This has been attempted from various dynamic points of view. Thus we have Bawden's expression, 'The function is the meaning of the structure'; Dewey's logical formula, 'Judgment is the direct reference of meaning to existence (predicate to subject): inference is the indirect reference'; and C. L. Herrick's, 'Existence is the affirmation of attribute.' All of which carry us rather too far afield to serve our present purpose.

Our figure suffers from the more obvious defect that any *section*, even the 'longitudinal section of a process,' is necessarily static, so that to bring out the meaning the term must be loosely used for a view of the movement *as movement*. Now, scientific explanation is the putting of things into relation, and the bonds of relationship come out more clearly and in richer detail when attention is fixed on the dynamic phases of the thing than when we look at its structure. But these dynamic phases are often too intricate and evanescent for our imperfect senses to take in. So to bring out clearly the difference between a pacer and a trotter we compare two series of instantaneous photographs of the movements. These, however, can never give us the full explanation until we translate them back into movement either by means of the vitascope or in imagination.

Or, again, the success of the histologist who studies serial sections of the brain of a fish will be measured directly by his ability, not only to carry in mind his enlarged reproduction of the *structure* in

the three dimensions of space, but especially to vivify that reconstructed mechanism by functional interpretation. If he stops with the construction of a wax model, he may create a fine work of art, but as a *scientific* product it is worthless until he goes on to discover what each part is *for*, *i. e.*, what it does.

Beings may be ranked in a graded series (which may correspond approximately with the order of their appearance in time, on a theory of progressive cosmic evolution) on the basis of the form and the elaborateness of the energetic complex, their range or the extent of the 'field,' and the definiteness of the polarization of focus from field. Thus a dynamo is a higher type of being than a tuning-fork.

Living beings are exceedingly elaborate complexes in which one of the distinguishing features is the high degree of differentiation of intrinsic and extrinsic factors, of 'focus' and 'field.' The intrinsic factors are illustrated by heredity and all the distinctively vital functions; the extrinsic factors are collectively termed environment (including the internal environment, as well as the external environment). It seems probable that at or near the focal point of the system lies metabolism of proteid. The organism is the interacting system as a whole, *i. e.*, the sum total of the reaction of protoplasm and environment, and may be studied from without, either as static (anatomy) or as function (physiology). In fact, the term *function* was first applied in this sphere, and the current specialization of physiology apart from anatomy is an expression of the importance of this analysis.

We recognize at once the solidarity of inorganic bodies with their environment. All inanimate nature is closely articulated in the perfection of mechanical adjustment. With living bodies the same intimate relation with environment prevails, as suggested by the Spencerian formula, 'Life is the continuous adjustment of internal relations to external relations.' But *in addition* there is a more perfect autonomy which is better brought out in my brother's definition of life, 'The correlation of physical forces *for the conservation of the individual.*' The emphasis here upon the persistence of individuality during change signalizes the distinctive feature of living bodies, and brings out sharply the contrast between focal (individual) and marginal (environmental) peculiarities to which reference was made above.

Man as organism may, of course, be studied in this way. But *my own* being stands opposed to all others in that there is self-consciousness. This, of course, is unanalyzable and inexplicable. But (and this is the essence of the 'functional' philosophy) it is not a thing apart, incapable of correlation with other parts of nature. It, too, is process, and when studied as such is found to have much in

common with the dynamic process or function as we find it in the objective study of other things than our own experience.

We have the evidence directly in experience that the conscious process is a movement against resistance, is tensional. A passive experience is an impossibility. We say, 'the mind goes out' actively to every presentation of sense, and the higher types of mentality exhibit tension and the overcoming of resistance at every step. At present, therefore, there is a tendency to regard the doubt, the question, as the typical psychic mode. When the question is answered and the resistance overcome this psychic process comes to an end; we stop thinking about it, though it may immediately become a datum for a new train of thought. Or, if apperception be chosen as the typical psychic mode, it amounts to much the same thing. A mere sensation is meaningless until assimilated to past experience. Until so assimilated it represents merely a break in the continuity of experience. This is unnatural and distressing; hence tension and effort to effect the synthesis. Apperception is the active building of the new element into the previously framed structure, and the questioning process continues until it fits into its place. We have at the end cognition of an *object*, the object as known representing the static phase of the dynamic process which we term cognition.

In this and many other ways which might be cited, consciousness as given directly in experience can be compared with the dynamic aspect or *function* of the other realities of our world. But my conscious life may also be studied critically in retrospect in a scientific way, and the consciousness of other men and lower animals may also be studied through the medium of language and other physical manifestations. And, when thus studied scientifically, consciousness is found to bear all the marks of a physiological function. Viewed physiologically, the relation between brain and mind is similar to that between the dynamo and the electric current which it 'generates.' Either is meaningless—indeed, not really existent, as we saw at the beginning—without the other.

In the case of brain, electric generator and soap bubble, to recur to our first illustration, we have a dynamic complex which polarizes into focus and field. Looked at as static and in terms of space relations, we have structure (bubble, machine, brain). Looked at as process and in terms of temporal sequence, we have function.

To an outside observer the relation of structure and function is essentially similar in all of the cases cited. The activity of any brain other than my own (and of my own in some of its processes) I recognize as a function strictly comparable with that of any other organ. My neighbor and my neighbor's dog are both to me bundles of structures and functions. But in my own case I have come to

recognize, by the indirect route suggested above, the fact that certain of the modes of the activity of my brain (or rather of my whole organism and the environing field related thereto, to be more accurate) constitute my consciousness.

We have seen that progressive polarization, and consequent individuation, is one of the characteristics of advancing rank in the orders of being. This involves, also, a sharper differentiation in our analysis of structure and function. In the organic realm, as distinguished from the inorganic, this differentiation comes out most clearly; and in the mental, as distinguished from physical or physiological function, the process has been carried so far that mental function as such, *i. e.*, as self-consciousness, while conscious of itself as function and of the analysis of structure and function in the elements of its own field, is not directly conscious of the field of its own activity as one with that activity. Indeed, in the nature of the case it can not be. For, while any element of that field, an 'object of sense,' may be, indeed must be by a reflective mind, analyzed into structure and function, both of which are objective to the observer and whose separation by other than logical analysis is obviously impossible, yet the total energetic complex which constitutes my life can not be so analyzed except by one on the outside. If my consciousness is the dynamic aspect or function of that complex, it can not at the same time be the static aspect or the structure. That is, my consciousness can not be the function of a structure and at the same time know that structure as structure.

Thus the subjective comes to be sharply set off from the objective in my experience. This sharp opposition is simply a further elaboration of the individuation of intrinsic factors which we saw above to be a distinctive characteristic of all living beings.

Objection may be raised to this form of statement as a characterization of consciousness as a function which has somehow lost its structure, while our main contention all the way through has been that these two are inseparable. But I insist that it is the exact converse. To the naïve man his own mental life is simply function—nothing more. The ancients located the mental faculties in the heart, bowels, etc., and sometimes regarded the brain as a mere temperature regulator on account of its bloodless and inert appearance after death. By prolonged scientific research we have discovered that the brain is in a true sense the 'organ of mind.' But this does not alter the fact that my own conscious process gives me no *direct* knowledge of cerebral structure, nor of any other structure. Directly, I seem to experience a 'stream of thought' or flow of mental process. But I have learned, as philosopher, to see that this is an incomplete and so incorrect view of the case and that my body is

the thinking organ. And so we have *found* a structure for that which at first appeared pure function. Furthermore, we have also now found the philosophical unity underlying that which we all experience as duality—the subject and the object—and now we see why it requires both of these factors to constitute the real self, as James teaches in his spicy chapter on the Consciousness of Self.⁴

This polarization of the self with the function of consciousness at the nodal point is doubtless the reason why we find that a functional point of view gives us a more illuminating insight into nature than does a structural view-point, even though we find at the end of our inquiry that from neither position alone can we get a complete view of reality.

It may not be amiss to emphasize again at this point that that which I call myself, like everything else, is neither structure nor function, neither body nor mind. It is the total situation, the functioning structure, action and reaction in a resisting field. From *my* point of view the field comprises the objects of experience and the focus of the action is my conscious process. To an outsider, however, I am merely one element of his field, an object, which he may view either as structure (my body) or as function (my behavior).

If, then, the total vital equilibrium, including as one of its elements the body-mind interaction, constitutes myself, but I can have *direct* experience of only a portion of one member of the system (*i. e.*, of those functions only which we term conscious), how can I truly follow the ancient injunction, 'know thyself'?

We are taught that scientific introspection is an impossibility, when strictly conceived. We can not fix states of consciousness in order to give them critical study. We can only grasp at them as they flit by and then study their vestiges in memory. In this process the dynamic element is lost. They become static, as truly objects of study as brain cells or chemical reactions. Accordingly, the current psychology of the day is mainly of the type called structural psychology and it is only with great difficulty that this can be translated into terms of genetic, dynamic or functional psychology—and that, apparently, only under the influence of pressure from without, from philosophy, biology, etc. These mental elements, when thus

⁴The error of subjective idealism lies in just this failure to recognize a real structural element in things. We may admit, without laying ourselves open to this reproach, that I know *directly* only the mental (functional) member of the dynamic complex which constitutes myself, *i. e.*, of certain interactions between my hereditary and other endowments ('focus'—the 'I' of James) and my environment (the 'field,' which includes the 'me' of James). For I have excellent inductive evidence of the reality of the objective elements of my own direct experience, as well as of other types of interactions than my experience.

objectified and studied in all of their relations, physiological as well as psychological, are found, as we have seen, to belong in the category of *function*. And now that the recasting of psychology in functional terms is well under way, we are led by this indirect route to the belief that conscious process, as I experience it directly in my own life, is function, even though the corresponding structure in the nature of the case can be known as a whole only indirectly. On the other hand, the dualism of my experience does not reach to an outsider. My mind and my body to him constitute one person in whom structure and function (if the observer were sufficiently master of anatomy, physiology and the cognate sciences), though sharply separated in logical analysis, could be fitted accurately together, mutually 'explaining' each other.

Are we then led back to the position of the old materialists, that thought is produced by the brain as bile is produced by the liver? To this one can give a categorical negative. Thought is not *produced* by the brain, nor is any other function produced by its structure, for that is to imply that the structure can in some way precede its function, the impossibility of which is manifest when we consider that structure can be defined only in terms of function. We students of natural science are apt to conceive of structure as something fundamental and primitive to which functions may in some way be added as a sort of accidental 'property.' Nothing could be more unscientific. And the functional view differs from materialism in that it sharply recognizes this fact, insisting that function in general, and mental function in particular, is in no sense to be conceived as subsidiary to, caused by, or derived from structure.

The philosophical questions as to the nature of ultimate existence do not necessarily enter in this discussion, but we may add a word or two. The functional philosopher may share with the idealists the belief that all things in your world and mine have grown up in our direct experiences. This experience is primary and is our ultimate court of appeal. All our world of objects (including immaterial objects such as ideas and hypothetical objects such as atoms and imponderable ether) is a 'construct.' But this world is real (however imperfect may be our realization of it) and serves as the 'field' in which those activities play, the mode of certain of whose tensional phases constitutes my consciousness.

Throughout the preceding argument we have spoken of all finite existences as polarized and as manifesting a duality, which culminates in the dualism of experience as recognized in philosophy. But it must be emphasized again and again that this is a purely methodological analysis, necessary perhaps only by reason of the limitations of thought. The existence itself is *one* thing, and our

analytical procedure must not for an instant be used as a justification for an ultimate dualism in nature. Nor, on the other hand, can we take a monistic position on either one of these methodological foundations alone. One can not be a materialist without giving the structural aspect of our analysis precedence over the functional; nor can one be a pure idealist from this point of view without giving the functional aspect precedence over the structural. But either of these procedures destroys the existence of the thing; for the structure can exist and be defined only in terms of function, and function can not exist dissociated from structure. This applies to everything from the chemical element to the human self. The methodological analysis can have significance only when things are viewed from the outside. In the case of the conscious person the clear analysis into the body and mind appears to have come rather late in human history. And from early Greek philosophy to the present time there has been profitless debate as to which of the artifacts thus produced is the real self. The philosopher, in reffecting their synthesis, does not return to the uncritical attitude of the child to whom the world is 'a big blooming, buzzing confusion'; but he builds up a world of *correlated* reality which is made possible only by reason of the analysis and synthesis in detail of the successive concrete data of daily life.

Again, to conceive the ultimate being as spontaneous energy may be permissible, but the expression is apt to carry the implication that the energy is 'disembodied,' or free from any structural element. This is not justifiable; for if the structure is simply a static aspect or phase in methodological analysis, it is clear that any equilibrated system of energy must exhibit a structural aspect, if subjected to such an analysis as we have attempted above. As a matter of fact, the feature already noted, that we must polarize these elements in order to discuss them, carries the implication that the concepts should be recast. Let us hope that some time they may be passed into solution and recrystallized in a more practicable form than is at present available. To use Professor Bawden's expression, 'The concepts of structure and function, matter and mind, thing and meaning, must be recast in terms of each other.'

At the conclusion of this argument the question naturally arises, What have we gained? Is not the problem of the meaning of the relation between function and structure as great and as far from solution as the philosophical question of the relation between mind and matter in its original forms? Granted. But, note that we have now one problem, not two, and this is the aim of all scientific investigation, to effect such correlations as will reduce the number of unknown factors. The law of uniformitarianism is the greatest induc-

tion of modern science, and the present inquiry is an endeavor to bridge one of the many gaps in the continuity of knowledge that still bar our progress. If mind can be subsumed under the general term function, we are the gainers by just that correlation. We have made one further step in the integration of knowledge. The advantages which follow to philosophy from the taking of this step are being rapidly elaborated in the recent writings of the apostles of the functional school.

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REVIEWS AND ABSTRACTS OF LITERATURE

Species and Varieties, Their Origin by Mutation. Lectures delivered at the University of California by Hugo de Vries. Edited by D. T. MACDOUGAL. Chicago, Open Court Publishing Co. 1905. Pp., xviii + 847.

Since the completion, not more than two years ago, of Professor de Vries's '*Mutationstheorie*,' the appreciation of the importance of his contribution to the theories of the origin of new forms has been rapidly growing. During the summer of 1904, on invitation from the University of California, Professor de Vries delivered a series of lectures at Berkeley which, under the editorship of Dr. D. T. MacDougal, are presented in the volume before us.

The key-note of the whole book is struck in the last of the three statements, printed on one of the fly-leaves. These statements, which make a somewhat dramatic opening to the whole discussion, are as follows: 'The origin of species is a natural phenomenon,' Lamarck; 'The origin of species is an object of inquiry,' Darwin; 'The origin of species is an object of experimental investigation,' de Vries. It is in this matter of experimental investigation, perhaps, that Professor de Vries has made the most important advance and has reawakened the active interest which, despite many able workers and theorizers, had flagged since the time of Darwin. To have brought the question within the field of experimentation has brought, too, the hope that some more definite evidence can be obtained as to the mechanism of the origin of new forms. To Professor de Vries's keen reasoning, his acute observation and above all his accuracy and care of culture methods, is due the new light that he has been able to throw on this most perplexing of all problems. To maintain that his theory is complete in all respects would, of course, be the attitude of an incautious enthusiast, but at least this much can be said, the author has seen and has recorded the springing into existence of new forms of plants of sufficient difference and stability to be regarded as what we are pleased to call new species.

In discussing the origin of these new forms it is necessary to distinguish carefully what is ordinarily meant by a *species* and what should be

understood by the term *variety*. This is accomplished in the chapters which lead up to the discussion of the mutation theory itself; and, while a considerable portion of the book is so occupied, the outlay of space is fully justified; for, without this, confusion would only be worse confounded.

It is first to be understood that the Linnæan or collective species are not in reality founded on single types, but rather on groups of closely similar types, and that the concept of the species as a whole is, so to say, the average impression. The forms which make up these group species are termed by de Vries *elementary species*, which differ from one another along positive rather than negative lines, and differ also in more than one quality. These elementary species may, indeed, constitute subspecies or the new species which the later, more critical taxonomists have segregated from the older group species. The existence of less fundamentally differing forms must also be recognized, and these, in the sense herein-after stated, are the *varieties* of de Vries. These varieties differ from the type from which they have sprung in a usually retrograde direction, by the loss of some one unit character or, in rarer cases, by the reappearance of some character possessed by nearly related forms. Varieties, then, differ usually by but one character and contain no elements really new. The term as ordinarily used is, however, a somewhat loose one and no doubt includes forms which should really be relegated to the class of elementary species.

The next question considered is the behavior both of these elementary species and of these varieties in relation to their progeny. Excluding all cases of hybridism and what are afterwards termed 'ever-sporting varieties,' the cases of atavism among varieties are found to be rare. Certain well-known atavistic forms of plants are, indeed, widespread in a geographical sense, but this is due to various means of vegetative propagation and not to the recurrence of the atavisms. Including, however, the cases where hybridism may have played a part, false atavism, or '*vicinism*,' is frequently observed and is to be ascribed to the accidental and often undetected production of reversionary hybrids, and can not be attributed to any innate tendency within the organism itself.

This leads to the discussion of hybridism in general, and again the author accentuates the difference in the behavior of species and of varieties. In the case of the former the unit characters which go to make up the difference between two species do not find their mates when the forms are crossed; the qualities are impaired, and consequently the crosses may be called uni-sexual. The resulting progeny are stable, non-reverting hybrids. In crossing varieties, on the other hand, the unit characters are all present and combine in pairs and the crosses may consequently be termed bi-sexual. The resulting progeny are not stable and will in due course revert according to the principle established by Mendel. According as to whether given unit characters are active or latent one or another quality will be respectively dominant or recessive.

Having shown that atavism among varieties is of rare occurrence where the question is not complicated by hybridization, the author next

considers the question of the 'ever-sporting varieties.' By this term he means varieties of pure origin which show a tendency to sport in nearly every generation. The somewhat cumbrous term is necessitated by the loose use of the word 'sport,' as it is commonly employed by horticulturists. Numerous specific examples are treated, and a careful analysis of this 'ever-sporting' tendency is made. It appears that the phenomenon is pretty definitely limited between two extremes. As the author puts it, it is to be regarded as a mere swinging from one extreme to the other of two opposite types, which happen to be united in one race, and that the limits of the 'ever-sporting variety' are as sharply defined as in any other variety. Thus again we can not find even in this process anything which will lead to the production of really new forms.

Thus does Professor de Vries lead up to the climax, namely, the production of *mutants*. These *mutants* are new, elementary species which have arisen suddenly and without intermediate steps from the parent type, and which, when properly guarded, breed true to their new characters. To grasp the full meaning of this it is necessary to follow the line of the author's thought in detail. It is impossible here to explain how he was led to seek for forms which evinced this tendency towards the sudden appearance, not of mere varieties, but of these new elementary types, which show some positive variation from the parental form.

As is well known, Professor de Vries found in *Oenothera lamarckiana* a plant most favorable for observation, although his conclusions are not based alone on the evidence afforded by this example. In all he obtained a dozen new types, all from the original parent form, *Oenothera lamarckiana*, although some were no more than varieties. Especial attention should be called to the fact that these pedigree cultures were carried on with the greatest care to insure the purity of the offspring and to keep an unimpeachable record of the pedigree of all the plants. The author makes it plain that such precautions are a *sine qua non* for results which are to have any value; and in the light of the possibility of hasty and incorrect conclusions being drawn from less accurate work, it is of the first importance to reiterate this.

Of these mutants which have been seen to arise some are, then, evidently new species. Their line of departure from the parent type may be in almost any direction. Some, we may say, are probably destined to failure, others perhaps are better placed than the parental type and could, in time, conceivably stamp it out. Here it is that we can apply the Darwinian idea of the struggle for existence, a struggle, however, not between single individuals, but between whole groups of elementary species. By such means, as Professor de Vries maintains, the process of the evolution of new forms might take place with far greater rapidity than by the method implied in the idea of continuous variation. Whether, indeed, origin by mutation is the only way in which new species may come into being is, of course, an open question, but that they may and do arise by these sudden jumps there seems no doubt after a consideration of Professor de Vries's evidence.

Such are, in the main, the important facts presented in the book. A

discussion of a general hypothesis of mutation must be in a measure speculative. One asks, what are the predisposing causes which lead to a state of mutability? Is there any periodicity in mutation periods? In fact, a host of questions, to which as yet no answer can be given, are at once suggested. It is plain that it is on the physiological side that the author expects to get the most assistance. Indeed, it is in the accentuation of the physiological as against the purely morphological point of view that he has done the greatest service towards the encouragement of research. If we are to find the stimulus which influences organic forms to mutate, if we are possibly to control the process in any way, it must be a question of the physiological and not the morphological conditions which we will have to investigate. Even though it might seem but a wild stretch of the imagination to even think of realizing such possibilities, it is plain that along the line of these and of related questions much information of the highest importance will probably be obtained.

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Zur Psychologie des Lesens bei Kindern und Erwachsenen. OSKAR MESSMER. Archiv für die gesammte Psychologie, December, 1903, Band II., Heft 2 u. 3. Pp. 190-298.

Experimentelle und kritische Beiträge zur Psychologie des Lesens bei Kurzen Expositionzeiten. ERICK BECKER. Zeitschrift für Psychologie und Physiologie der Sinnesorgane. Band 36, Heft 1 u. 2. Pp. 19-73.

These articles are concerned with the problems of word-perception. Becker discusses critically the earlier tachistoscopic investigations of Wundt and Zeitler and of Erdmann and Dodge, and offers experimental evidence of the correctness of the methods and conclusions of the latter that the perception of words is by means primarily of the total word-form. Messmer develops the main theories of Wundt and Zeitler of a successive apperception (in the Wundtian sense of the word) of the single elements of the word complex by means of a rapid movement or fluctuation of attention over it, and a second hypothesis of Zeitler closely connected with this, that of the so-called domineering letters.

On the basis of experiments with very short exposures of words with four adult subjects and six children of seven to eleven years of age, Messmer attempts a classification of readers into two general types, the objective and the subjective type.

In the case of the former the point of attention coincides very closely with the physiological fixation point. Long words are read only by combining single sections of small groups of letters which are successively perceived. The perception of the subjective type is, in contrast, relatively independent of the exact place of fixation. During the brief interval of exposure the attention flits back and forth within the field of view; and is thus able to fix upon long words and phrases in their entirety. If a word is placed well to the left of the point of fixation, the objective type of reader can see only the few letters lying nearest to the fixation; the subjective type, by means of this ready movement of attention, grasps

the whole word. The former depends further in perception almost exclusively on the exterior stimulus, the latter is interpretative and liable to mistakes and confusion.

The number of cases is small. The results of the readings of but one adult in each case illustrate the classification with any consistency. Children are believed, however, to exhibit as a class a wide fluctuation of attention. Experiments were not made to determine when in that case the transition to the objective type takes place. That subjects offer introspective evidence of this wandering of attention in the almost imperceptible interval of two sigma must, it seems to the reviewer, raise a presumption against the accuracy of the introspection.

The author's conception of word-perception combines with some vagueness the theories of immediate apprehension by means of the word form, and of successive perception on the basis of differences in the relative optical distinctness of letters, and letter groups. The more letters there are of individual geometrical form in a word, the greater is the danger of the word innervation being divided; and, contrariwise, the fewer the differentiating letters, the greater is the aid given to a single unitary innervation. The domineering letters being more easily seen are first recognized. This necessitates a back and forward movement of attention, and thus differs importantly from the left to right succession supposed by Zeitler.

In the ordinary method of reading, sentences composed mainly of short words are more difficult to read and take more time than those of long words, the motor innervation tending to fewer interruptions in the latter case. Fatigue occurs more noticeably in very rapid reading. Children read nonsense syllables as rapidly as words; adults read the former relatively much more slowly. Valuable lists and discussions of the number and kind of mistakes made by children and adults in tachistoscopic reading are collected at the end of the paper.

Becker's article is first concerned with the earlier criticisms of method, namely the partial adaptation of the eye during exposure, the presence of after-images, and the length of time for exposure admitting the possibility of changes of attention during the interval. The question of adaptation may be disposed of with the observation that as many words are actually read as is possible by the usual fall exposure apparatus, where such adaptation is not supposed to be present. The presence of after-images caused by exposures of only a fraction of a second and not differing noticeably in intensity from the surrounding light could at most aid only in acquiring the rough general appearance of the word form and not in detection of the individual letters; and there was, finally, no evidence of their presence in the experiments as conducted.

The probability of a shifting of the attention during the time of exposure is the main subject of investigation. The chief effect of such changes would be to increase the amount of matter read at one time—the main objection of the earlier criticism. Becker's experiments show, however, that as many letters—up to twenty-six—can be read in the extremely short interval of spark illumination during which time the pos-

sibility of change of attention has not been thought possible. The danger of after-image effects was carefully excluded. The hypothesis is further criticized on theoretical as well as on experimental grounds. The general theory advocated by Wundt was that the unequally favorable position of the different parts of the field of view during fixation is rendered less noticeable through the fact that the point of attention moves successively to those letters which are distant from the point of fixation; a 'searching' (*absuchen*), as it were, of the visual field thus occurs at each fixation. Such an hypothesis seems improbable in view of the difficulty which is ordinarily experienced in separating the points of attention and fixation; and the experiments made tend to disprove it.

In the first experiment the attention and fixation are centered together upon a letter lying in the primary line of regard; in the second experiment the attention is separated from the point fixated to a letter lying to the left of it. If a frequent change of attention occurs during the exposure, both letters ought to be equally well perceived in either instance. The results show, however, that in the first case the letters to the left are less often read, and in the second case the percentage of perception of the left letter is twice as great as in the first experiment. One fact may have escaped the writer and at least needs explanation, viz., that the total number of perceptions of *both* letters is larger when the attention is separated from fixation than when they are directed together. It suggests, especially in view of the difficulty which the subjects experienced in maintaining the separation of fixation and attention, the possibility of small eye movements and inaccuracy of fixation, so that the actual points of fixation and attention may have each lain somewhat within the space between the two letters. The only means at the writer's disposal of guarding against this contingency was direct observation of the subject's eyes.

In another experiment red circles were placed about some of the letters, the theory of course being that, if a shifting of the attention occurred, it would center reflexly on these letters. The results were again negative, the color seeming to have somewhat of a disturbing effect. The further observation of the author that the non-domineering letters, such as in the endings *en*, *es* and *er* of words and elsewhere, are sometimes as clearly recognized in the shortest exposures leads to the conclusion that the importance of the domineering letters is simply in the more effective conditioning of the gross word form of which these more prominent letters are capable.

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Cournot et les principes du calcul infinitesimal. HENRI POINCARÉ. *Revue de Metaphysique et de Morale*, May, 1905, pp. 293-306.

This article by Poincaré is one of twelve by as many writers in the present number of the *Revue*, all of which are devoted to an examination of the ideas of A. A. Cournot (1801-1877). These have been strangely neglected, not only by thinkers who have come after him, but by the men

of his own time. Mentré, who deals admirably with 'Les racines historique du probabilisme rationnel de Cournot,' explains the silence of Cournot's contemporaries regarding his work as due to his modesty and the slightness of his skill in advertisement, to the circumstances (events of 1848 and 1870) that attended the publication of his works, to the then tyrannical reign of eclecticism, to the exclusively literary culture of his generation, and finally to the common fortune of all misunderstood geniuses, that of being in advance of the thought of their time. Cournot's was a polydynamic mind. His scientific and philosophic interests are strikingly diverse and manifold. History, education, politics, criticism, economics, methodology, statistics, logic, social science, mathematics, all came well within the range of his intellectual activity.

In the article under review Poincaré presents Cournot's mathematical thought in so far as it bears especially upon the character and significance of the calculus. Naturally, in this connection, the focal points and defining lines of the elder savant's philosophy come clearly into view. The so-called two methods of the calculus, that of limits and that of infinitesimals (*infiniment petits*), the Leibnitzian and the Newtonian, which the modern mathematician is disposed to regard as only a difference of notation, seemed to the critics of Cournot's time to differ profoundly. To Cournot himself the two methods appeared to be not merely distinct, but opposite. Each was the exact inverse of the other. How and why? The answer is found in his scheme of thought, in his philosophical tenets, and is near at hand. Cournot was a thoroughgoing realist. There was an external universe quite independent of any thinker. Kant was wrong in regarding space and time as 'merely conditions upon the understanding, as forms inherent in the constitution of the human mind and not in the exterior things which it perceives.' Space and time, however, and other magnitudes are continuous. Natural changes, as growths, expansions, contractions, velocities, accelerations, are continuous. These proceed infinitesimally. The *natural* order is *from the infinitesimal (infiniment petit) to the finite*. This *natural* order is also (for Cournot) the *rational* as *opposed* to the *logical*, which latter, unlike the former, depends upon the thinker. The thinker is man, who, because of his infirmity, can not proceed *rationally* but only *logically*, i. e., *from the finite to the infinitesimal petit*. Accordingly the method of limits is logical, but not rational, while that of infinitesimals is rational, but not logical. Both, however, are available for dealing with continuities. Both are rigorous, the former directly, the latter indirectly, *through* the former. And in this connection, it is a fine conceit of Cournot's that, because the natural or rational order is from the infinitesimal to the finite, the derivative $f'(x)$, contrary to Lagrange's usage, should be called the generating or *primitive* function and $f(x)$ the derivative or *derived*. A word of elaboration may be permitted here. Suppose, for example, that $f(x) = \frac{4}{3}\pi x^3$, the volume of a sphere of variable radius x ; then $f'(x) = 4\pi x^2$, which is precisely the surface, the *front* (as Professor W. B. Smith has happily called it) of *variation* of the varying volume. If, again, $f(x) = \pi x^2$, the area of an expanding or contracting circle, then $f'(x) = 2\pi x$,

which is the circumference, *i. e.*, again the front of variation, the *primitive* variable which by continuous change generates the areal magnitude $f(x)$. The latter is, accordingly, in the sense explained, in conformity with natural (Cournot's rational) process, strictly the derivative of $f'(x)$.

The distinction or opposition between the *rational* and the *logical* is for Cournot, despite their etymological equivalence, fundamental and very significant. Rational order holds of things considered in themselves independently of thoughts or thinkers. Logical order is merely a property of language regarded as instrument of thought. The former consists in, resides in, first principles, simplicities, which are quite independent of their discovery and out of which the complex directly arises. The latter proceeds in the inverse order, by a kind of *reductio ad absurdum*, indirectly from the complex and secondary to the simple and primary. *Raison* is, then, something absolute and would be the same for thinkers of different psychological constitution from that of man. *Cause*, on the other hand, is relative, has a 'double origin, physical and psychological.' Consequently all truths, all verities, be they mathematical theorems or physical phenomena, have their *reason*, but only phenomena have their *cause*.

For Cournot, then, nature is rational and simple. The simple is the reason of the complex. The single Newtonian law is the reason of the Keplerian triplet or complex of laws. In proportion as a formula becomes complicate, *ceteris paribus*, it becomes suspicious. Simplicity and symmetry being thus for Cournot the criterion of certitude, he finds in them 'the secret of the preeminent rôle of mathematics. Mathematics is the science *par excellence*, the most perfect example of scientific form and construction.'

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JOURNALS AND NEW BOOKS

ARCHIV FÜR GESCHICHTE DER PHILOSOPHIE, April, 1905, Band XI., Heft 3. *Paul Tannery, historien der philosophie* (pp. 293-302): F. PICAUVET.—His life and works, with special attention to his division of the development of Greek science into four epochs. *Einteilung der griechischen Philosophie* (pp. 303-314): GOEDECKEMEYER.—In the ontological stage we see the divisions of the naïve period and that of the Sophists and methodical philosophers. In the 'eudæmonistic' stage those of Pyrrhonic scepticism with Epicurus and the Stoa, of Carneadean scepticism, with the philosophy of compromise, and of Ænesidemean scepticism with the philosophy of revelation and of positivism. *Zur Geschichte des Briefwechsels zwischen Leibnitz und Malebranche* (pp. 315-321): A BUCHENAU.—A letter from Leibnitz, hitherto omitted from the printed publications of this correspondence, is here given, with comments. *Voltaire als Philosoph (Schluss)* (pp. 322-368): P. SAKMANN.—Voltaire would limit the power rather than the goodness of God. In opposing

Christianity he held that the conception of God as punitive and rewarding is useful and pedagogical rather than true, and it must be freed from all that is anthropomorphic, as well as from all that is immoral, with a view to eliminating also the moral and providential attributes religion ascribes to him. The soul is a function of matter, and not substance; but matter could not create soul, which God himself created. In later life he inclined from the belief in man's freedom to disobey God to the conception of absolute determinism by God's laws. *Die geschichtlichen Grundlagen der Weltanschauung Schopenhauers* (pp. 369-394): P. WAPLER. - Schopenhauer was indebted to Tieck's pantheism, to Schelling's monistic striving, and to Voltaire's free thinking and cynical vein. He learnt from Plato and Boehme rather than from Spinoza. (Schluss folgt.) *La psycho-physiologie des passions dans la philosophie ancienne* (pp. 395-413): G. L. DUPRAT. - With Plato the leading conceptions in this connection were conformity to nature and repletion, pleasure requiring both of these, pain the absence of either. Aristotle's explanation of emotion through the medium of the *πνεῦμα*, intermediate between fire and air, dominated his successors (under the form of 'animal spirits') even to modern times. *La beatitude chez Spinoza et chez Fichte* (pp. 413-422): O. BOS. - While both find blessedness in true thinking, Spinoza alone admits that revelation of itself can give blessedness to the believer. Spinoza clings to the personal immortality of the soul, and to the emanation theory of the Neo-platonists, both of which Fichte rejects. *Jahresbericht; III., Die polnische Philosophie der letzten zehn Jahre (1894-1904)* (pp. 423-436): H. v. STRUVE. *Die neuesten Erscheinungen. Eingegangene Bücher. Zeitschriften.*

ANNALEN DER NATURPHILOSOPHIE, April, 1905, Band IV., Heft 2. *Über die Erziehung der Chemiker* (pp. 153-170): W. RAMSAY. - Discoverers are made rather than born, and should be the goal of all instruction in chemistry. To this end let all, young and old students and professors work together in the laboratory; which should be small. Let the students learn through failures. The highest positions should be very well paid, and should be filled by the vote of the related faculties. Examinations stifle the spirit of invention. *Das biologische Moment in alten Pflanzendarstellungen* (pp. 171-188): F. ROSEN. - From the fourteenth to the sixteenth century the most noted works of art exhibit scant information concerning biological facts, though an improvement is to be noticed toward the end of the period. *Zur neueren Entwicklung der Biologie* (pp. 188-203): J. LOEB. - Biologists may now reciprocate chemical aid by producing through enzymes important chemical compounds. Mendel and de Vries introduced a new art, that of artificial evolution. We may be on the eve of most important discoveries as to the function of tropisms in instinct, and of the fatty connection of nerve cells in the work of thought associations. Psychology must vary more the organisms which are its objects of study. Technical biology is the weightiest innovation of the century, by which microorganisms produce remedies for diseases, as well as food and other sources of energy practically available.

Science too is potent in displacing superstition, and in substituting an ethics of production for an ethics of spoliation. *M. W. Lomomossow, der erste russische Chemiker und Physiker, mit Bildnis* (pp. 204-225): B. N. MENSCHUTKIN. - A detailed account of his life and works. He was pre-eminent in introducing quantitative work in chemistry. *Eine energetische Darstellung des Brechungsquotienten* (pp. 226-232): W. GRIMM. *Über den Grundbegriff der Wirtschaftswissenschaft* (pp. 233-239): J. ZMAVC. - This fundamental concept is that of human work. *Über die Grösse der unmittelbaren Berührung zweier Punkte. Beitrag zur Begründung der diskreten Geometrie* (pp. 239-269): B. PETRONIEVICS. *Neue Bücher* (pp. 269-280): 'W. O.' - H. Driesch, *Die Seele als elementarer Naturfactor*. H. Driesch, *Naturbegriffe und Natururteile*. W. Jerusalem, *Einleitung in die Philosophie*. W. Jerusalem, *Lehrbuch der Psychologie*. A. Petrunkevitch, *Gedanken über Vererbung*. Yrjö Hirn, *Der Ursprung der Kunst*. W. Schultz, *Das Farbenempfindungssystem der Hellenen*. A. Pfänder, *Einführung in die Psychologie*. J. Petzold, *Sonderschulen für hervorragend Befähigte*.

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NOTES AND NEWS

PROFESSOR FERRARI contributes to the April number of the *American Journal of Psychology* a note on 'Experimental Psychology in Italy.' The beginnings of experimental psychology in Italy have been, he states, very precocious and very important. Buccola was, without doubt, the first to make use of lunatics in the study of problems arising in normal psychology. Since the death of Buccola, the Psychiatric Institute of Reggio Emilia has maintained the tradition of experimental psychology, and there, in 1896, was established the first laboratory of experimental psychology, properly so-called, in Italy, although Professor Sergi had already a laboratory of anthropology and psychology at Rome. The Psychiatric Institute of Reggio Emilia publishes the *Revista Sperimentale di Freniatria*, in which most of the psychological contributions of Italian workers have appeared. Recently two chairs of experimental psychology have been founded, one at the University of Rome, occupied by Professor De Sanctis, the other at the University of Naples, occupied by Professor Colucci. Professor Ferrari notes the great stimulus given to the study of psychology in Italy by his translation, in 1901, of the 'Principles of Psychology' of Professor James. That the first edition of over 2,000 copies should have been exhausted in two years has 'for a country on the road to fortune, but still very poor—something marvelous about it.'

DR. HENRY H. DONALDSON, since 1892 professor of neurology at the University of Chicago, has been elected professor of neurology at the Wistar Institute of Anatomy, Philadelphia, having been selected for this position by the advisory board of the institute, consisting of leading American anatomists. Dr. Donaldson will assume his new duties at the institute on October 1, 1905, and will be at the institute during January, February and March. This arrangement will continue for two years, when Dr. Donaldson will be permanently transferred to the institute. Every effort will be put forth to establish a strong corps of neurological workers, as neurology will be the field to which the institute will devote its first attention. An assistant to Dr. Donaldson will be selected by the advisory board.

MR. DAVID F. SWENSON, instructor in philosophy in the University of Minnesota, has been granted a year's leave of absence. He will spend this year at Columbia University as assistant in philosophy. His place at Minnesota will be filled by Dr. Percy Hughes, for the past two years assistant in philosophy at Columbia University.

DR. WALTER F. DEARBORN (Columbia) has been appointed instructor in educational psychology at the University of Wisconsin.

DR. WENDELL T. BUSH (Columbia) has been appointed lecturer in philosophy at Columbia University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE PSYCHOLOGY OF 'ETERNAL TRUTHS'

ETERNAL truths, the goal of philosopher and visionary, are having a hard time of it, nowadays, with all the theories spun about them. These theories seem to have brought them down to the level of pure hypotheses, a social necessity or a personal convenience. Looking at the matter ultra-pragmatically one might be tempted to say that men have become so wearied of the pursuit after such truths that they feel a deep inner need of berating the elusive things, much as the fox criticized the grapes. For all this, there is still another line of approach which, so far as I know, has never been fairly pursued, and which, though plainly not leading directly to a solution of all the problems involved, nevertheless seems to take us to a point where certain fundamental descriptions are easy and sure. I refer here to the investigation of our immediate experiences of the meanings expressed in the so-called eternal truths. In particular we must first be interested not in the truthfulness of these meanings, but rather in their supposed eternal character. For empiricists the experience of a truth does not offer so many profound perplexities as the experience of its eternal character. Believing firmly that every meaning has a concrete basis in immediate experience, one naturally wonders how we can ever experience eternity, even representatively. It will prove highly instructive, I am sure, if we can make this point clear without resorting to mystical notions about 'social necessity,' 'heart-hunger for the eternal,' and the like which pervade so much current literature with their hazy glamor.

The fact that we mean something when we hear or use the adjective 'eternal' I take to be absolute evidence for the further fact that there is some typical experience here involved and awaiting empirical description. This description must be rendered before the nature of eternal truths or 'objectively valid propositions' can be expatiated upon. For it is a commonplace of psychology to-day that time is only an experience-quality, just as space, light, feeling, etc., are, so that whoever qualifies anything as 'eternal' is deliberately bringing it into connection with a certain experience-quality.

The empiricist wants to know precisely what all this *means* before he attempts to champion or condemn; furthermore, he is impatient with all harangues basing upon the dreadful consequences of doubting eternal truths, so long as these latter have not yet been given an unequivocal significance that can be verified by anybody.

At the outset it is clear that, in experiencing the meanings we come to call true, this trueness is not a part of any such meaning itself, but rather a qualification reflectively added to the meaning as a whole for some reason or other. I assume that everybody recognizes the *a posteriori*, 'external' character of all worth-qualities. As James says, no 'click in our mental machinery' labels meanings true or false, real or unreal, as they pop up into mental view. It now behooves us to inquire whether the quality of 'eternality' is given or derived, a peculiarity of immediate experience or one of reflective constructions. An overwhelming verdict in favor of the latter view is handed down by philosophers and psychologists alike, all agreeing that it is a stupid *contradictio in adjecto* to speak of experiencing all times in one present moment. Even those who find certain difficulties in this answer do no more than to say that the present experience contains phases which represent or function for all other time-experiences. The numerous types of such interpretation can not even be named here; only this must be noted, that in almost every such interpretation the time-qualification is reflectively added in the same general way that the validity-qualification is, thus leaving us to conclude that the meaning 'eternal' is joined to the 'true' meaning *on the ground of something else*, this something else being presumably a worth of some sort. This seems to be, in rough, the idea recently developed by Royce.¹

Space forbids here every criticism of the philosophy of eternal truths, but I would suggest that our theorists make a sharper distinction between the eternal and the timeless, two concepts which, though often enough marked off from each other by thinkers, tend constantly to run together. Psychologically the eternal is intricately connected with duration; it means unlimited duration in every conceivable connection of thought. To speak of truths as eternal is to assert that certain worths endure forever, a proposition to which all empiricists with one accord must take exception in so far as they find themselves compelled to treat the statement as unproved and probably unprovable. But, on the other hand, the timeless is merely

¹ 'The Eternal and the Practical,' *Philosophical Review*, Vol. XIII., pp. 113 ff. To my mind, the attempt to turn what is primarily a time-quality into nothing more than a value is rather adventurous, because it confuses psychological description with philosophical interpretation, and thus invites all sorts of semireligious notions into the fold of scientific thinking.

that which has nothing to do with time, whether duration, simple change or succession. And this concept has a psychological basis utterly different from that of eternity, as I shall now try to show.

Turning to any experience-moment, we find an aggregate of primitive qualities—or better, simple meanings—forming a vague totality bound together by little more than its own ‘now-ness’ or ‘given-ness.’ So far as our ability to describe them goes, the differences between these meanings are quite as primitive as the meanings themselves. At least it is sure that, even if their differences are not ‘given’ in quite the same way the meanings themselves are, this does not contrive to make these latter alike; a color is not a sound, even when their difference has not yet been apperceived. Now, among the primitive meanings we find duration, simple change and succession, each a perfectly distinct character, however much it may be involved with others. Moreover, a confusion of red with change, or of sweet with duration is, at least for all modern-day experience, impossible; nor does this impossibility base solely upon the verbal definition of the qualities in question, but rather upon the character of the experiences themselves. The difference is not a matter of degree, as some metaphysicians would like to have it; when I say that duration has no color, I mean something totally different from what I would in saying that a man’s face is colorless. When I say that change does not taste, I do not mean that it is tasteless as boiled water is, *i. e.*, that its taste is practically a negligible quality. In the same way, though less clearly perhaps, the duration of an experience-moment wherein we experience a color is not a quality of the color, but only a dependent phase in the mental act. As Stumpf’s classical monograph on space-perception and, more recently, Husserl’s development of logical descriptions, have well shown, the independent *variables* in an experience-complex may depend for their empirical existence upon other phases in the complex, and yet not be properly qualified by these. Variations in color are independent of spatial and temporal variations, and so on. We have, then, meanings of the sensational order which are timeless in the strictest sense of this word.²

² It may be said that beyond certain limits a color is modified by its extension; that the succession of one and the same beat, if rapid enough, transforms the beat into a tone, and so on. These facts, however, are so highly complicated that I must forbear explaining them here. Enough to say that in all such cases we do not have a variation in the mere time-quality alone, but what is most significant, a *parallel* variation in color, sound or the like. There is no sort of causal connection here; it being impossible to think of the time-variation as preceding the other ones in time. This hint may be useful in warning us away from the most serious of the many possible misinterpretations.

The second point to note is the commonest phenomenon of mental life, namely, the transfer of meanings from one aggregate to another. This is what is called reproduction, or in certain cases memory. Meanings here break loose from their original setting wherein they are implicated with a time-element (a 'Now'); they function in wholly new combinations involving new time-elements. Now the fact that I can now compare a red seen yesterday with a red I now see without involving thereby a comparison of the time-qualities, strikes me as very simple and binding evidence of the independence of color-qualities in a new sense whose significance has possibly been over-neglected. Not only is red something totally different from duration as simple quality (or 'pure' experience), but its persistence in mental life is not colored by any temporal qualities in connection with which it may have occurred. The red I saw a year ago *means* something to me which has not been undergoing a change in meaning ever since I first saw it; and when the psychologist opposes this with the remark that we all do forget and confuse past experience-qualities, we must reply that forgetting such qualities is not the same as changing them, and that every confusion can be verified only because somebody is able to compare past with present. Even in those cases where a genuine confusion occurs, however, it is not the time-quality of either term which has anything to do with the confusion; it is a confusion of many terms so nearly alike that the phenomena of least perceptible difference and attention play a weighty rôle.

All this, of course, does not hinder us from admitting that meanings can be 'dated,' *i. e.*, recognized as having occurred in another experience-complex than the one colored with the present 'Now.' For, as we shall soon have occasion to emphasize, experience-complexes of nearly all sorts persist unaffected by time-qualities precisely as the simplest colors, tones, tastes, etc., do. Thus we have the peculiar but by no means mystical phenomenon of the independent persistence of part-meanings and of group-meanings composed organically of these same part-meanings. There is a whole world of intricacies wrapped up in this general fact, a world full of work for psychologist and logician alike. Here, however, we must be content with the widest generalization alone, which bases directly upon the multirelativity of pure experience-parts, which James has described in outline.³

³ Perhaps some occasion will arise where I may show how the deep truth of James's theory needs restatement in order to be ready for the philosophical fray. The distinction between experiences and pure experiences, as well as the description of present experiences as 'representing' or 'knowing' past ones, can not help leading to the gravest misinterpretations, as the criticisms advanced at the recent Psychological Congress at Rome can testify.

The other than temporal relations in which any meaning stands depend wholly upon the particular character of the meaning itself, the meaning to which it is related, and what may generally be called the relating 'medium' or the other meanings necessarily involved in the construction of the relational one. Thus the relation of tones in a harmony depends upon the intervals (not temporal) and the individual tone-qualities. The fact that a wholly different complex-effect is gained by introducing temporal differentia, thus producing a simple melody, in no wise affects what we have said, but simply shows that time-elements may sometimes be 'parts' of an experience-complex. It would be ridiculous to say that the experience we call a harmony is 'qualified' by the simultaneity of its elements and, therefore, is a temporal experience in the sense here under discussion. For all we thus far maintain is that the harmony-meaning is not a time-meaning, and that further it can be shifted, *as a meaning*, from one complex to another without affecting its significant identity. What makes the harmony, as we experience it directly, is not the simultaneity of its parts in the sense that the succession of the parts of a melody makes up this latter. In the former case the so-called time-quality does not 'belong' to the harmoniousness, while in the latter instance we feel the intervals and successions out and out as *being* melodious.

What now of those experiences containing meanings which in retrospect are called eternal truths? Is it all a matter of reflection? Plainly not. Whenever I experience the binomial theorem meaningfully; that is, whenever I understand what is meant by the term, I may describe my experience as above. First, I experience no duration. The duration 'of the moment' is, of course, quite real, but, as a logician would say, irrelevant; that is, it is another meaning, just as taste is not sound or a triangle not a vertigo. Secondly, the meaning 'binomial theorem' may persist in my thinking, *i. e.*, through an indefinite number of experience-complexes involving different time-qualities, and not change in the least. Thus yesterday I may have experienced 'the binomial theorem is hard to learn'; to-day, 'the binomial theorem is the basis of all higher algebraic operations'; and to-morrow, 'I've forgotten the confounded binomial theorem.' In each case I experience the same unitary meaning; even in experiencing that I have forgotten it, I am experiencing it just as psychologically as ever, save that I am now unable to use it in the way for which it is fitted by its own peculiar character. And, lastly, the binomial theorem has no time-factors as internal organic constituents; its *a*'s and *b*'s and equalities are not historically located so that their dates determine in any way the meaning of the complex.

That all this can be said of logical propositions may be seen upon simple trial. As a mere description of our experiences of the meanings the three distinct types of timelessness are beyond dispute. But they afford us absolutely no clue to the way whereby men come to call certain meanings true and others false, some fleeting and some invariable. Just because of their inability to do this they have been neglected by humanists far more than is justified by the philosophical situation of our times. It is perfectly true that the sort of timelessness above described is found even in senseless and absurd meanings. And it is further true that nobody can *know* that the thing thought of an hour ago is now being thought of in such a way that there is absolutely no difference in its meaning-organization involved in the repetition.

There is no need to shilly-shally about this fundamental solipsism; the escape does not lie in fancy theories explaining the fact away, but rather in a frank acceptance both of it and of the practical way we overcome its theoretical disadvantages. We do gain the mastery over our world of meanings by the simple device of meaning the something and trusting to its own efficiency to carry us through. Even in the course of a simple argument I have no means of demonstrating that the man Smith I had in mind at the outset is even functionally the same as the one of which I now talk. Indeed, any demonstration would merely assume what it seeks to prove. But at every point in the same argument I do *refer* with full awareness to the same identical meaning (unless I am a sophist or other intellectual conjurer). I *mean* by the man Smith absolutely the same individual that I meant three sentences back; and about this intentional reference there can be no more doubt than there can be about the red I now sense or the warmth I feel. The humanistic contention that this identity of meaning gains its sole 'verification' in its practical results can not be challenged. But it is clear that even the most practical results are meanings in the ideal sense, so that the whole tale must be retold of them too. When I call a thing practical or true, unless it be that its full practicability is being simultaneously experienced, I am making the same reference, immediate and undemonstrably valid; so that, after all, *the ultimate practicability of anything is its ability to be referred to as an identical meaning*. Upon this every other utility rests. If the thing or quality or meaning of other sort be incapable of persisting as identical, breaking loose from its warm setting of sense and entering into colder groups, then it is not only useless, but for all practical purposes non-existent. To paraphrase a brilliant thought of Janet's, however keen the sensual or intellectual pleasure of an experience

might be, if, after its brief sensational existence I could not even *refer* to it, it might as well have been a pang of bitterest sorrow. This identity of meaning is, however, given me as really as anything can be. It is quite immaterial whether or not the psychological processes vary with the recall, whether the memory-image is each time a new one or not; so long as the true thought-object is the one referred to, there is some hope that I can turn it to account. Otherwise neither absolutist nor humanist can say anything about it. So, after all, the mere psychological timelessness of meanings, either as genuine recurrences or as objects of reference (ideal, assumed recurrences), is the point of departure for every logical theory and not the goal of the visionary. What we are all looking for in active life, however, is not non-temporal meanings, but rather ones that will wear well. And neither logic nor psychology has the monopoly on these.

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THE IDEAS AND TERMS OF MODERN PHILOSOPHICAL ANATOMY.¹

THE ideas of philosophical anatomy have been developed during three periods of human thought: First, the Greek, in which adaptation was clearly perceived as the central phenomenon of life, in its morphological and physiological expression. Second, the pre-Darwinian period, in which the idea of the environmental relations was developed especially by Bacon; and various forms of morphological, physiological and especially psychical adaptation were developed gradually through the studies of Buffon, Lamarek, Geoffroy St. Hilaire and more especially Goethe; adaptations began to be distinguished broadly into *primary*, or those which had been of use in past time, and *secondary*, or those which were recent in origin and in full use at the present time. Even prior to these writers, however, Vesalius in his studies of human anatomy perceived the importance of this distinction. Philosophical anatomy really owes to Darwin himself the fundamental ideas which are involved in the terms primitive, retrogressive, progressive and dominant, and are understood with increasing clearness. This is the third period of anatomy as established on evolution. Huxley in his brilliant essay of 1880 on 'The Laws of Evolution as Applied to the Mammalia' was the first to emphasize persistent primitive characters and modernized or adaptive characters, laying great stress on the importance of the former in questions of phylogeny. Among many

¹ Presented before the New York Academy of Sciences, April 10, 1905.

other anatomical papers E. Ray Lankester's 'Degeneration, a Chapter in Darwinism,' brought out especially the significance of retrogressive changes.

Huxley was a master of logic, but even his keen vision failed to recognize the vast importance of the element of analogy, or similarity of function, in bringing about a similarity of structure in evolution independently of real similarity of kinship. This final phase in anatomical analysis is largely due to the broad extension of paleontology, and the demonstration over and over again in nature that similar forms have been produced independently either by parallelism from animals related in ancestry, or by convergence in animals unrelated in ancestry. To these processes and results of similar modeling Lankester has applied the fitting 'terms homoplasy' and 'homoplastic.'

EXPLANATION OF THE TABLE.

In the Table an attempt is made, for the first time to my knowledge, to bring together all these processes of change and to indicate their interrelations. There can be little disagreement as to the terms in columns I., II., III., but some surprise may be felt as to the broad inclusiveness of column IV. The justification for this column lies in the fact that in the analysis of any animal form the questions which each anatomist should put to himself as regards each character are: Is this a primitive or a secondary character? If primitive, is it in a balanced or stationary condition, or is it in process of change? Secondly, is this a retrogressive or a progressive character? Questions to be answered certainly only by the evidence afforded by ontogeny or paleontology, and in a comparatively limited number of cases by comparative anatomy. Further, it may be necessary to ask: Is this a dominant character, or one which has attained such importance in evolution as to crowd out and overshadow all others?

Anatomical analysis, however, does not stop here; we must constantly be on the lookout for transitional characters or characters in the very act of change. These transitional or evolutionary characters appear at present to be of four kinds: first, *modifications*, or such as have been brought about during the life of the individual without necessarily being connected with germinal changes; second, *fluctuations*, or fluctuating variations, changes of degree or proportion which may be due either to somatic or to germinal causes, one of the most difficult problems in regard to fluctuations being to ascertain how much is germinal and how much is purely somatic; third, *saltations*, which are altogether germinal, or at least prenatal,

I.

Life is the continuous adjustment of internal and external factors and processes. Adaptation is of the broadest character and relations, internal and external, including:

ENVIRONMENTAL OR BIONOMIC, *i. e.*, in relation to physical and living surroundings to geologic, geographic, physiographic, meteorologic, faunal and floral conditions or changes.

MORPHOLOGICAL OR ANATOMICAL, *i. e.*, structural, in organs, direct or correlated.

PHYSIOLOGICAL OR FUNCTIONAL, *i. e.*, in habits and uses of organs.

PSYCHICAL AND NEUROLOGICAL, in the brain, nervous system, and psychic life generally, imitations, instincts, intelligence.

II.

In every animal adaptations of the past, present and future mingle, and may be broadly distinguished into:

PRIMARY OR PRIMITIVE.

TRANSITIONAL.

SECONDARY OR ADAPTIVE.

ADAPTATION AND ADAPTABILITY.

III.

AS REGARDS PRESENT TIME.

Animal and plant types, organs and functions are accordingly found in all grades of development and adaptiveness, with reference to past, present and future activity.

1. *Primitive*. 'Persistent primitive,' or arrested types, organs and structures which continue to be useful although perhaps of very great antiquity, in a balanced or stationary, also 'progressive' or 'retrogressive' condition.

1. *Modifications*. Somatic and in part germinal changes, environmental, also use and disuse.

2. *Fluctuations*. Exclusively germinal, fluctuating changes of degree, continuous.

3. *Saltations*. Germinal marked changes of kind, sports, mutations of De Vries, discontinuous variations.

4. *Rectigradations*. Continuous germinal changes in a single direction, mutations of Waagen.

1. *Retrogressive*. Declining types, organs, habits and functions. Reduced, degenerating, partly functional, and functionless, passing through the stages of 'regression,' 'vestigial,' 'variable,' 'atavistic,' or 'reversional' (according to certain percentages of occurrence) into 'recessive' (*i. e.*, very rarely reversional).

2. *Progressive*. Rising or developing types, habits, organs and functions. Rudimentary, propietic or nascent organs and structures in the true sense of beginning, becoming sub-functional, then functional or fully useful.

3. *Dominant*. Organs, etc., attaining such importance as to overshadow all others, often leading to the extinction of the types through extreme specialization.

Fitness in time, *i. e.*, in past time, in the present, and tending toward fitness in the future.

The collective phenomena of fitness and the evolution of fitness as the essential and distinctive feature of life.

Grades or degrees of fitness as determined in *individuals* by direct study or comparison, in the sciences of anatomy, comparative anatomy, paleontology, embryology, in ontogeny, fetal and larval life.

V.

AS REGARDS ORIGIN.

The results of adaptation in different animals and plants are also comparative, *i. e.*, similar, or dissimilar, according to the operation of similar internal (*i. e.*, hereditary) and environmental conditions.

I. HOMOLOGOUS, *i. e.*, Homogeneous.

II. ANALOGOUS.

Parallel. Analogous adaptations, *i. e.*, similar characters arising independently in *similar* or *related animals* or *organs*, causing a similar evolution, and resulting in parallelisms.



Convergent. Similar adaptations arising independently in *dissimilar* or *unrelated animals* or *organs*, causing a secondary similarity or approximation of type, resulting in convergence.



III. NON-ANALOGOUS.

Divergent. Increasing specialization and differentiation resulting in 'divergence' or 'adaptive radiation.'



Fitness of certain groups or organs in comparison with *other groups* (*i. e.*, classes, orders, families, genera, species, varieties) as well as in comparison with organs and functions in other groups of animals.

in origin, including marked changes of kind, the 'sports' of Darwin and Galton, the 'discontinuous variations' of Bateson, and the 'mutations' of de Vries. Wide celebrity has been given to the word 'mutation' through the brilliant experiments and observations of de Vries, but the original significance of this term as employed by Waagen and Scott was a different one, and I think it probable that Waagen used it in the sense of determinate variation. Fourth, *rectigradations*, a new term with which I propose to characterize what in the year 1889 I described as 'definite variations'; it embraces changes which many writers have described as 'orthogenetic,' under the supposed law of direct change (usually in an adaptive direction), which is termed Orthogenesis; these probably are the 'mutations' of Waagen.

All the processes in column IV. are those which may be observed at the time or moment of observation in any organism, provided we have sufficient keenness of perception or sufficient knowledge to discriminate between them.

The elements of comparison given in column V., on the other hand, relate strictly to questions of origin, or to the past and the future, also to questions of comparison. The first broad distinction of comparison is between I., Homologous and, II., Analogous characters. In a strict interpretation homologous refers only to those elements which are 'homogenous' (Lankester), or have an actual similarity of origin or ancestry. Under analogous characters there is a simple distinction to be drawn between the results of parallelism and of convergence, terms which I maintain should be used in a somewhat stricter sense than they have been hitherto. Looking to the past and future we have III., the non-analogous characters and the broad phenomena of divergence. Appreciation of animal divergence, or of divergence in special structures and organs, naturally belongs to the evolutionary period of anatomical thought; a period beginning with the branching system of Lamarck and continued in the still clearer perception of divergence in the writings of Darwin. I have elsewhere proposed to employ the term 'adaptive radiation' for the general results of divergence as observed in a single group, distinguishing such a group in process of divergence as a 'radiation,' either a 'continental radiation' where diverging on a large scale, or a 'local radiation' where diverging in a more restricted environment.

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DISCUSSION

QUANTITY, QUALITY, AND THE FUNCTION OF KNOWLEDGE

IN the *Monist* for July are two articles which raise an issue of categories that appears to be crucial in current philosophic method and aim, so that if there be a quarrel brewing in the speculative world here should be its incipience.

I

Oddly enough, in 'Quality and Quantity,' by Johannes Gros, the fundamental contention is taken as settled. 'The human mind knows only number adequately.' 'The mind only grasps fully and clearly that which is reducible to the terms of ratio.' 'We reduce our impressions to particular mathematical formulas, and simply by means of this reduction of a confused state to a clear idea, we manage adequately to grasp the real.' 'Science . . . simply affirms that the mathematical expressions in which it sets reality are to us the only condition of any perfect intelligibility.'

I quote these scattered statements to show the nature of the assumption which the author evidently considers self-evident, as 'founded on a necessity of the human mind,' although he incidentally supports it by appeal to the history and ideals of exact science.

The problem which the discussion formally sets is the reduction, so far as may be, of the category of quality to that of quantity. Quality is analyzed as the expression of a relation between two terms—the self, as a series of conscious states, and the external world, as the register or measure against which the self describes its own serial nature. Subjectively the sensational series is incapable of possessing any definite character; it is only by dint of its objective reference that it can even know itself as a series. This objective reference is the created external world, which is a kind of mirror of the self; it is the sensation series externalized, and therein lies its qualitative nature. But such a world is a palpable hypostatization. Hence, quality in things is illusion due to the need for externalizing a cause for sensation; all it yields is confusion replicating the uncertainty of subjective sensation.

Now the problem of knowledge is to clarify this confusion. On the basis of the underlying assumption (that the mind 'knows only number adequately') this means mathematical formulation. Physics, in postulating and describing a world of sensation-causes, gives such formulation. 'Objectively and scientifically, the external object is

only our sensation measured in what we suppose to be its cause; it is the intensive expressed by the extensive.' What it amounts to is a kind of self-description with the subjective (confused) element eliminated. 'When we think that we are reducing external reality to a mathematical formula, it is nothing but ourselves that we are so reducing—ourselves rendering objective the product of our thought.'

The significant point is that we do this in the category of quantity, by measurement and equation. Science is an algebra of experience by means of which all that is meaningful is rescued from the inconstancy and turbidity of subjective sensation. Its numerical schematisms are the quantitative rendering of the series of qualitative facts that make up the first blush of life.

Hence: 'Quality, scientifically speaking, is a point of view relating to the exigencies of our body in its relation to external objects; it is in us the more or less confused feeling of something good or evil for our organism. Quantity is the irreducible point of view of thought in its effort to reflect and classify the world.'

II

The article in which the editor of the *Monist* replies to the foregoing can hardly be termed less than a brief for 'The Significance of Quality.' It is written with evident ardor and a will to vindicate. In behalf of the discredited category he makes a series of points: (1) That quality is a fact. (M. Gros denied only that it is a significant fact.) (2) That historically it plays an important rôle in the development of thought. (M. Gros but contends that the history of science tends to eliminate it.) (3) That after the last measurement is made there is still a residue of experience only to be described qualitatively; and indeed that qualitative classes play an important rôle in knowledge. Finally, (4) that the idea of unity is itself qualitative; 'a unitary complex is not merely a summation of its constituent parts; it contains a new factor which is not of a quantitative but of a qualitative nature, originating through the co-operation of its parts; and this new factor would not have been produced by any of its parts alone, but is the result of their mutual interaction.'

The two latter points are the ones of importance, and as the last explains and justifies the other, it alone need be considered. The gist of the interest lies in the fact that arrangement independent of quantity originates significance. Arrangement, the relation of part to part, is in fact the essence of quality; the nature of quality is 'always due to a definite configuration or structure, constituting a

higher unity endowed with new and characteristic features of its own, not contained in any one of its several parts.¹ And here we have one of the radicals of knowledge; for life, evolution, the universe itself, can not be comprehended except under the guise of such a complex unity. With none whatever increase or diminution of matter or energy, the world may very well suffer loss or gain of value just by the rearrangement of its constituent parts. The mere need of inclusiveness in our conceptions fortifies the position of quality among the categories.

III

It is evident that there is here a somewhat sharp divergence in the conception of the function and possibilities of knowledge. M. Gros is convinced that the only valuable knowledge is clear knowledge and that the only clear knowledge is mathematical. Dr. Carus esteems any knowledge incomplete which does not lead to what I may call motivating conceptions, that is, to conceptions possessing an attractive or inspirational character. The category of quality is lightly or largely valued accordingly.

The real issue, then (an issue which I conceive to underlie many differences of current philosophic thought), is not one of categories, but of the proper rôle of the rational in the manifold of experience. If one's interests be mainly logical or practical, the quantitative formulation will strongly appeal; for it is not to be doubted that the summarizing and predictive operations of thought are immensely facilitated by such process. But if one's instincts be ethical or esthetic, then the more imaginative and inciting category of quality will represent the preeminent type of knowledge.

Is this antagonism final? There are considerations which answer negatively, perhaps readiest to be reached through a discussion of certain moot points in the articles resumed.

1. Foremost: Is the assumption of M. Gros, that clear knowledge

¹Dr. Carus's definition of quality is certainly open to objection. For in what category are we to think the parts which enter into the structure or establish the unity? They are not quantities; they can not be measured by the unit—except the indefinite axiom that a whole exceeds its parts be a type of measurement. In any case, if the unit have more than a relational quality, if it be more than relation, its parts must share its character—in which circumstance the quality would be theirs. Moreover, it is not beyond dispute that simple qualities may both be thought and be real. Hobbes's dictum, *idem semper sentire et non sentire ad idem recidunt*, is not wholly credible from the standpoint of an outsider debating the presence or absence of reality. At least it would seem that an intelligence, turning over possibilities of creation, might hesitate to pronounce an exquisite, all-engrossing agony ethically the same as no experience at all.

is essentially quantitative and mathematical, a justified assumption? It looks very much as if analysis would reveal here the personal equation, and, what is worse, a *circulus in probando* at the basis of his argument. For while the goal of his reasoning is to show that the external, physical world is clearly known only in mathematical schemata, the special intelligibility of mathematics he refers invariably to its implied translation in extension; geometry, he evidently conceives, is the ultimate norm of clear thinking. In other words, the only clear knowledge is of external (spatial) relations because spatial relations only can be clearly known.

However, the formalities of the reasoning are not to be quarreled with if the intuition upon which it is based have good warrant, and as such warrant the author's appeal to history must certainly serve. Yet granting (at least as a right of individual intuition to affirm) that the geometer's are the clear ideas, the primacy of the category of quantity is not thereby conceded. For it is the fairest of questions to demand wherein the clarity of these ideas consists, whether in extension as such, or in extensive relations, or in number and limit, or again in the sensuous forms of intuition whereby we first know space. Now in Euclidean space, at all events, it appears to the writer that it is indubitably in the sensuous intuition that the clarity exists, and a nice indication of the truth of this interpretation is the fact that, although we have two senses, touch and sight, whereby we perceive space, we rely almost exclusively upon one, sight, for those finer measurements which yield our exact knowledge. Indeed, it has been cleverly noted that the history of physical science might almost be phrased as the progressive conquest of the domains of the other senses by vision. *'Le langage de la vision des formes est celui qui s'applique directement au plus grand nombre des faits extérieurs connus; on peut presque dire que le langage scientifique n'est autre chose que le langage optique et que nous n'avons une idée claire des phénomènes, que quand ils se traduisent pour nous en langage optique. Aussi allons-nous voir que l'histoire de l'empiètement progressif du canton optique sur les autres cantons sensoriels peut être considérée comme l'histoire du progrès de la science.'*²

Manifest as is the support here given to M. Gros's favor for the geometer's knowledge, no less manifest is the defeat of his claim that this knowledge is primarily quantitative. Mensuration is largely translation of the acquisitions of the less specialized into the forms of understanding of the more specialized sense. The clarity of extensive quantity is the clarity of visual sensation. And this is saying that quantitative knowledge is essentially but a uniquely

² F. Le Dantec, 'Les lois naturelles,' p. 37. Paris, 1904.

developed variety of qualitative knowledge, to which it refers for final intelligibility.

2. But extension does not exhaust the notion of quantity. Both time and gravity enter into many measurements, and, though the one may be recorded upon the dial of a clock and the other by the tilt of a steelyard, such translations are not invariable. Further, there are all sorts of complex relations inherent in number expression having no physical reference whatever.

If I may quote from the St. Louis address of Professor Royce:³ "The idea of number, familiar as its applications are, does not derive its main value from the fact that eggs and dollars and star clusters can be counted, but rather from the fact that the idea of number has those relations to other fundamental ideas which recent logical theory has made prominent—relations, for instance, to the concept of order, to the theory of classes or collections of objects viewed in general, and to the metaphysical concept of the self."

Now in all of these various applications we get exact (that is, mathematical) knowledge which is by no means quantitative. Number itself, as mere counting, would appear ultimately to reduce to bare discrimination of *this* and *that*, to the primary abstraction of difference, which is certainly qualitative. A refinement of difference is limitation, which, with repetition, gives series and measurement, and here first we get true quantity, a greater and a less. But it is sufficiently obvious that even in measurement the qualitative reference is not escaped. The content of the unit, whether an etheric vibration, the beat of a metronome, or a bed of Procrustes, is what it is as determined by quality, and it is the content of the unit which gives the measurement significance.

In fine, the category of quantity is only a highly specialized development of quality, serving knowledge to peculiar advantage. All its embodiments partake of that individualism which is the earmark of quality. Triangularity is more than a special construction of straight lines and the golden section is more than a definite proportion. Indeed, mere direction derives its character from the ideal orientation of the body; thus, like measurement with its ideal repetitions, giving us knowledge by forming 'attachments' for foreign-seeming objects; that is, by imbuing them with familiar feeling-tones.

IV

Our conclusion, then, is that quantitative knowledge is a special case of qualitative, deriving its peculiar cogency from the capabilities and aptitudes of a particular sense, that of vision, or from relational ideas having a more or less direct reference to qualitative conceptions.

³ 'The Sciences of the Ideal,' *Science*, October 7, 1904.

What follows from this is a generalization of some scope: the genesis of reason is to be sought in imagination; there may even be an eventual conformity of the ideals of these two faculties, an eventual identity of the true and the attractive.

Of course I would not wish to say that the mere fact of the genetic unity *necessarily* means the teleological unity of the mind's activities. But there are grounds for asserting that it *may* mean this. Human nature, with all its diversities, is still an organic whole; the condition of its being is the harmonic action of its parts. The mere fact of the enormously costly and cumbersome evolution of reason is guaranty of its biological value—of nature's sincerity in creating it for the whole organism. We all know the like value of the more ancient conative side of the mind. Have we not, then, warrant to suppose that the sapience of reason is vouchsafed for some better realization of those ideal satisfactions which the imagination so stoutly labors to supply? Certainly the fact that the chief category of our exact knowledge appears to be a direct specialization of the chief category of our imaginative, motivating, knowledge would seem to argue consistency in nature's intent.⁴

Such an interpretation might very possibly smooth over some philosophical antagonisms.

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REVIEWS AND ABSTRACTS OF LITERATURE

Yale Psychological Studies,¹ New Series, Vol. I., No. 1. *Monograph Supplement, Psychological Review*, Vol. VII., No. 1, March, 1905. New York: The Macmillan Company. Pp. 226.

The various papers on the different illusions report a very interesting

*If illustration be needed, the history of music is in point. Here the distinction of the quantitative, or mathematical, and the qualitative, or artistic, ideal of the study of sound, is as ancient as Aristoxenus and the Pythagoreans. As M. Le Dantec notes (*op. cit.*, p. 34), the two interests have developed wholly diverse languages, that of acoustics, that of musical art. "Ces deux langages sont exactement équivalents; l'un d'eux est plus complet que l'autre; par exemple n'importe quel bruit sera justiciable de l'analyse acoustique et pourra être reproduit par un phonographe, tandis qu'il sera impossible de le définir en langage musical. Le langage musical est limité à un certain nombre de sons choisis par les hommes d'après le plaisir qu'ils trouvaient à les entendre, et ayant par conséquent un rapport indéniable avec la nature humaine; notre gamme fait hurler les chiens." In other words, the exact, comprehensive language is that of acoustics, but the significant utterance is that of music proper. The ends of the latter are those for which both interests work; improved musical instruments follow the researches of Helmholtz and Lipps; broadened esthetic appreciation ensues upon the theories and achievements of Wagner.

¹The contributions in the supplement are as follows: 'Introduction to a Series of Studies of Eye Movements by Means of Kinetoscopic Photographs,'

and successful attempt to photograph the movements of the eye in looking at the various lines. As a piece of psychological mechanism, the work done shows the greatest amount of thoroughness and care. The initial difficulty met with was the lack of any natural means of getting a fixed and identifiable spot on the eyeball which could be used for the pictures taken. The bright spot of the eye could not be used, since this is a variable quantity, changing with each rotation of the eyeball in its socket. To obviate this difficulty, a white spot was painted on the cornea by means of flaked Chinese white, the vehicle being paraffine. The head of the subject was supported by a device in the back, and by a 'bit' in the front, in the usual place, between the teeth. Iron spectacles, with shining steel beads on the lower rim for purposes of reference, were also worn by the subject. The photographs taken (at about the rate of eight per second) were then projected by lantern on a sheet of white. Since the iron spectacles with beads remained in the same place, the positions of the white spot in its wanderings were accurately marked and numbered as picture after picture was thrown on the screen.

In the photographs of the eye movements it is shown that in fixation of a point, the eye does not really fixate a point, but rather a small area. It goes round and about the point, the image of the point, therefore, taking position on various parts of the fovea. Another interesting fact brought out is that the two eyes are only approximately coordinate in fixation, or in passing over a line from one end to the other. In such passage, however, the eye is able accurately to follow a line from some given point to another. It might have been of interest to find what relation the area of fixation bears to the area of the fovea. It might be possible with the data in hand to determine whether the retinal area relative to fixation is the fovea, and whether fixation areas can be calculated for given distances of fixation.

Three papers in the monograph apply the method above described to the determination of eye movements in looking at the three given illusions. In the Müller-Lyer illusion, "the subject was directed to begin either at one of the extremes or at the middle where the obliques meet the horizontals, and to look across the figure in one direction and then back, and so on, fixating each time the three points of intersection of horizontals and obliques. This movement was to be made slowly enough to allow the subject to see the illusion clearly in the course of each inspection" (p. 55). The photographs show that the eye makes restricted movements in the underestimated part of the illusion, from which Judd concludes

by Charles H. Judd, Cloyd N. McAllister and W. M. Steele, pp. 1-16. 'The Fixation of Points in the Visual Field,' by Cloyd N. McAllister, pp. 17-53. 'The Müller-Lyer Illusion,' by Charles H. Judd, pp. 55-81. 'The Poggendorff Illusion,' by E. H. Cameron and W. H. Steele, pp. 83-111. 'The Zöllner Illusion,' by Charles H. Judd and Henry C. Courten, pp. 112-139. 'Analysis of Reaction Movements,' by Charles H. Judd, Cloyd N. McAllister and W. M. Steele, pp. 141-184. 'Practice Without Knowledge of Results,' by Charles H. Judd, pp. 185-198. 'Movement and Consciousness,' by Charles H. Judd, pp. 199-226.

that sensations of eye movements are not satisfactory as explanation of the illusion. The conclusion, however, can hardly be justified. As data for eye movements over an illusion, such movements being made under direction, the results are accurate and trustworthy. But as a study of illusion, they are hardly available. The restricted eye movements might be due to the intimated ends of the intersecting lines, to caution necessitated by small space, *such space being already seen*, and only partly fixated. Might it not be that (where the lines are not too long) the space is already seen, the smaller space hampering movement and so causing interruption? The underestimation may be the cause of the interruption instead of the reverse. *The illusion is seen before any extensive eye wandering has taken place*, and any eye movements occurring after the illusion is seen would be the results and not the causes.

In the experiments on the Poggendorff illusion, two of the five observers were asked simply to look back and forth over the presented figure. The results show most accurately the positions of the eye in following the line. It is shown that "the first portion of the movement conforms generally to the length and direction of that portion of the oblique line of the illusion over which it passes" (p. 102). The movement then shows a period of retardation and a significant change of direction. The movement then goes on uninterruptedly across the intervening space. There is then another series of pauses, after which the final stage is in the general direction of the oblique line. It seems highly probable, from the nature of the illusion, that these first movements determine the illusion, after which the movements may or may not be the cause. Since this illusion is one of direction, it seems to me that in this case, if the figure be not too small, some movement is necessary before the figure is seen in its entirety, and the nature of the movement brings about the illusion. The first (Müller-Lyer) and the last (Zöllner) illusions are rather ones of space.

In the Zöllner illusion tests, the observer was asked to look up and down all the long lines in any order he pleased, and asked to notice as carefully as possible the illusion. These movements are carefully plotted. In this illusion, as in the first, the illusion seems to exist before much movement has taken place. The movement, it seems to me, comes after the illusion exists, and seems to be an illusion partly of space, rather than of direction as is the Poggendorff. The plotting, it seems to me, shows not the movement giving rise to an illusion, but rather the curious investigation of an illusion already present. Exactly how much movement has already taken place at the moment the illusion stands out, would have to be determined, and all remaining movement would then be simply a result. A curious fact brought out is that the movement along the middle line is in a direction opposite to that in which the line appears to be deflected. Since, as stated in the paper, the habit of reading from left to right might be given as an explanation of the deflection, it would be interesting to see how the illusion influences those who read from right to left, or from the bottom up, and also how the deflection is seen by those who are unable to read, whether children or men.

As studies of eye movement under certain conditions, these experiments are worthy of the closest study, and should be carefully gone over by any one working in that line. But as studies in illusion, they are hardly available. Whether or not the angle explanation is valid, can not be determined by tests *with another means*. Even if the eye movements told us that the illusion depended on them, this would hardly shut out the angles as possible aiding causes. Where, as is highly probable, we have a mixture of effects, the methods of residues should be followed, and to determine the influence of the angles, the method of concomitant variations should be pursued *with the angles*. The authors, it appears to me, seem too anxious to be satisfied with simple explanations. It is possible by artificial means to produce eye movements similar to those made in looking at the illusion, without any angles being present. If, then, the illusion persisted, we might infer something from eye movement alone. The chief value of the experiments is their close connection with the sensori-motor theory of Dewey, and Judd himself recognizes this in his final paper on the relation of movement to consciousness.

In all these illusions, in addition to the photographic work done, a series of tests was carried on to find the effects of practice, which results are carefully plotted in curves. Mostly all the curves show a descent more or less steep. The general effect on the illusion is to bring about its disappearance.

The analysis of reaction movements deals chiefly with the antagonistic reaction in response to a stimulus after preparation. The method of reaction was of the 'press the button' kind. By a system of levers and springs the adjustments, vibrations, attitudes of the subject before and after the signal and stimulus were accurately recorded by means of a kymograph. "The records amply justify the statement that there is no such thing as a single reaction movement. Between the warning signal and the stimulus there is always a complex process of adjustment, and when the stimulus arrives, it finds the hand and the nervous system of the subject in some state of preparation which determines at once the way in which the reaction movement will be executed. There is no subject whose reactions are uniform or simple. Some are, indeed, more nearly uniform than others, but nearly every individual record shows complexity" (p. 163). The different types of reaction may be classified as the antagonistic, the wavy and the balanced. In the antagonistic reaction there is a general tendency on the part of the subject to prepare for the reaction by gradually or suddenly moving in the opposite direction. The wavy reaction seems to be due to a normal rhythmic tendency, the reaction being shorter when the tendency at its highest point coincides with the stimulus. The wavy line marked on the paper may be attributed to a general nervous rhythm. From this point of view, the level line would signify expressive activity, since it shows a rigidity in the subject due to an effort to overcome the natural rhythmic tendency. These various changes in movement between the signal and the stimulus, it seems, were made without any consciousness of them by their author.

A rather interesting series of experiments are recorded by Judd

showing the effects of habit without any knowledge of the fact that the habit was operating. A number of lines were drawn, some running up from left to right (+), and some down (-). A table was divided in two parts. On the left side, and in the field of vision were nine papers, one line on each. The right part of the table was out of the field of vision, being hidden by means of a screen. When a given line appeared, the subject was required, blindly, to put a dot at the place which he considered to be a continuation of the line, such dot being placed on the right-hand side. After a series of tests with the nine lines, it was found that no habit was formed, Judd concluding therefrom that this was due to the fact that there was no knowledge of results, and thus no motive for improvement. The corrective modifications due to knowledge of results were lacking. There is, however, another factor which seems to have been overlooked. The order of the lines given was, -60° , -15° , -45° , $+15^{\circ}$, $+60^{\circ}$, $\pm 0^{\circ}$, $+30^{\circ}$, -30° , $+45^{\circ}$. We have here a succession of conflicts which would operate strongly against the formation of any habit. With a single line a more rigid test could be made of this hypothesis.

A number of tests were then made with lines $+60^{\circ}$ and -45° . The subject was allowed at intervals to pull aside the screen and to see at the same time the white paper on which he was to indicate the projection, and the paper having on it the line $+60^{\circ}$, without moving his hand while looking. The new conditions operated by causing some variations in the results at first, but this error finally disappeared, and a habit for $+60^{\circ}$ was formed. On the other hand, these conditions, favorable for $+60^{\circ}$, operated against accuracy in the case of -45° . After a new series of tests with the nine lines as at first, the $+60^{\circ}$ habit was evident. A series of further tests was then made to see to what extent the $+60^{\circ}$ habit was effective. In a last series of experiments the subject was allowed to place his pencil in full view of both line and blank before doing it blind. This and other preceding tests were finally effective in disintegrating the $+60^{\circ}$ habit. As the author states, these tests show conclusively that where results are unknown, a habit operates against positive reaction a different way, and is only modified where its misapplication is seen and understood. This, it seems to me, is a form of variation due to subjective peculiarities, and which is allowed for in the 'personal equation' in different fields.

In the final paper of the monograph, Judd tries to bind the preceding papers together by an examination of the relation of movement to consciousness. He criticizes Münsterberg's '*Aktionstheorie*' as not fully covering all cases of motor adjustment. He cites against the '*Aktionstheorie*' those cases of vivid consciousness in which action seems impossible just because no motor channels appear to be open, and inclines rather to McDougall's view that the vividness is due to the necessity of opening a motor channel. I do not think that Judd does full justice to Münsterberg's position. Action does not mean in its fullest intent, throwing a fit, for example, or standing on one's head. A motor tendency, an attitude or an alternation of attitudes, is sufficient, consciousness of such

attitudes giving us the vivid aspects of the present moment. Nor can the *opening* of a motor channel satisfy conditions, for this would carry us back to the cerebral psychology of the associationists, or to the misunderstood '*Innervationstheorie*' which has been discarded even by Wundt. The beginning of motor response to sensory stimulation would be nearer the truth. As Judd points out, Dewey has most adequately expressed the actual state of affairs by his 'sensori-motor' theory. "The sensation or conscious stimulus is not a thing or existence by itself; it is that phase of a coordination requiring attention because by reason of the conflict within the coordination, it is uncertain how to complete it." (Dewey, *Psy. Rev.*, 1896, p. 368, quoted by Judd, p. 202.) This sensori-motor theory is then examined in the light of the preceding experiments of the monograph and offered as a satisfactory explanation of them.

As a general suggestion in regard to the diagrams, tables and plates in this monograph, and also in other works, I offer the following: Could not each table, etc., have below a clearly printed set of explanations, etc., to facilitate reference? The constant reference back and forth is most confusing, and, as a matter of fact, most readers pass merrily by these tables, which are most laboriously gotten up for the purpose of elucidation. A proper set of explanations, directions, etc., clearly printed under each table, if necessary the whole thing occupying a separate page, would help the reader in getting the most out of them.

FELIX ARNOLD.

NEW YORK CITY.

An Introduction to the Theory of Mental and Social Measurements. EDWARD L. THORNDIKE, professor of educational psychology in Columbia University. New York, The Science Press. 1904. 8vo. Pp. xii + 212.

The few unimportant errors and omissions in this admirable book have been pointed out by various reviewers. I shall use the limited space that can be given to it here to speak of three particular excellencies, which make it the best introduction to statistical theory yet published, and a text-book that ought to mark an important departure in college training.

To begin with the simplest matters first, Professor Thorndike's more strictly practical chapters, on the arithmetic and algebra of the actual operations proper to statistical work, are marked not only by the simplicity and clearness of statement that are indispensable in such writing, but also by the ingenuity of a mind that has attained extraordinary cleverness in dealing with concrete cases. Students not altogether unfit for statistical work have had their difficulties with Bowley and Davenport. No student who can 'scrape through' the mathematics of his freshman year can fail to master Professor Thorndike's chapters on 'The Arithmetic of Calculating Central Tendencies and Variabilities,' 'The Transmutation of Measures by Relative Position into Terms of Units of Amount,' 'The Measurement of Differences and Changes,' and 'The Measurement of Relationships,' if he applies his mind to the task. These chapters alone would make Professor Thorndike's work more useful as a practical handbook in statistics than any other.

Of far greater importance, however, are the earlier chapters, setting forth the nature of statistical quantities, and, in particular, of mental and social measurements. Here, for the first time in the literature of statistics, we have a fairly adequate presentation of the difference between a full statistical statement in the form of tables and surfaces of frequency, on the one hand, and, on the other hand, condensed expressions, such as the average, the average deviation, the mode and the median. The full significance of this difference is brought out particularly well in chapter IV., on 'The Measurement of a Group.' The figures, 21 to 47, showing the actual distribution of measurements in a well-chosen variety of concrete subjects, are among the most instructive pages upon which the beginner in exact scientific research can spend his time. Not less commendation should be given to the pages on 'the interpretation of the form of a surface of frequency,' 'homogeneous and mixed groups,' and 'selected groups.' The reader who really masters the ideas conveyed by these pages will be well grounded in the fundamental notions of statistical thinking. He will be in no danger of mistaking the commonplace columns of undistributed figures that do duty for statistical 'reports,' for the real information that science calls for.

This admirable account of the actual distribution of frequencies in concrete cases leads naturally to a further discussion, that, namely, contained in chapter V., on 'The Causes of Variability and the Application of the Theory of Probability to Mental Measurements,' in which I find the third particular excellence of Professor Thorndike's work. He has seen clearly the important truth that when we have collected a great number of tables or surfaces of frequency we shall have so many, and such endlessly varied, departures from the 'normal' or 'probability' curve, that we shall perhaps no longer be justified in calling the probability curve normal in the sense of preponderatingly frequent for mental and social phenomena. His independent study of this subject has brought him to a certain conclusion which, although unobtrusively stated as a footnote on page 70, is in my judgment the most important paragraph in the book, and I therefore quote it:

It is a question whether students of mental measurement should not from the beginning be taught to put the so-called normal distribution in its proper place as simply one amongst an endless number of possible distributions, each and all due to and explainable by the nature of the causes determining the variations in the trait. The frequency of the occurrence of distributions somewhat like it could then be explained by a *vera causa*, the frequency of certain sorts of causation. On general principles this seems desirable, but in order to make for the student connections with the common discussions of statistical theory and practice and with the concrete work that has been done with mental measurements, I have compromised and subordinated the general *rationale* of the form of distribution to the explanation of the probability curve type.

I believe that I am not wrong in thinking that this is a far sounder view than the one which students usually obtain from books like Jevons's 'Principles of Science' and Venn's 'Logic of Chance,' and it is in har-

mony with some of the later thinking of Karl Pearson and others, including Norton.

I can not leave this excellent book without making a pedagogical suggestion. If I had the making of the list of required studies in an American college course, I should put into it a term's drill in this book of Professor Thorndike's, whatever mathematical requirement I had to throw out to make place for it. Or, if necessary, I would substitute it for the required work in political economy; for it is a book that opens up, as nothing else ever has opened, the whole realm of scientific ideas and scientific methods in the so-called, but not really, inexact sciences.

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The Elements of Psychology. EDWARD L. THORNDIKE. New York: A. G. Seiler. 1905. Pp. xix + 351.

This is a book that will surely interest every teacher of psychology. The author is not only an original investigator of high standing and a clear and forceful writer, but he has done what few, if any, other psychologists of reputation, have done in writing a text-book, *i. e.*, thought more of the impression to be produced upon beginning students than of what his fellow psychologists may think about what he says. It is true that psychologists as such will find it a thoroughly scientific, up-to-date treatment of the subject in which the really important truths of psychology are emphasized, yet it is as a text-book for beginners that the work is especially important.

As a scientific work the chief characteristic to be noted is the prominence given to dynamic psychology, which occupies nearly half of the whole book. The treatment of descriptive and physiological psychology, though brief, includes all the essential elements. The biological and genetic point of view is prominent in all parts of the work. Unlearned and learned reactions to situations made possible by nerve connections is the basal thought of nearly all discussions of mental processes. The prominence given to instinct and habit and to the applications of the laws of habit to all kinds of mental operations and to various life situations makes the book a most excellent foundation for the science of education.

The chief point upon which the author presents a view opposed to the common one is regarding the images of movement sensations as initiators of movement. He holds that the stimulus to movement is usually an external situation or end, sensed or imaged, instead of an image of the subjective sensations that have been experienced in executing such a movement. With this view the reviewer is in sympathy. Unfortunately, in the preface, the author states the matter in a way that implies the more radical view that images of movement sensations *never* excite movement, and that this view is held by the reviewer and others. It seems to the writer clear, in all cases where the movement sensations are more important events in the mind of the actor than the objective results of the

motion, that images of the sensations experienced in such motions will be the chief excitants to subsequent movements of the same kind. Images of movement sensations are, therefore, probably the chief excitants of *some* movements in nearly every one and of *many* movements in the case of persons who are of the motor type.

As a text the most marked and valuable feature is the large number of exercises for students involving an application of what the student has learned, similar to that which the student of mathematics uses in working examples under the various rules he has learned. With very few exceptions these exercises are admirably well adapted to the purpose of making clearer, fixing and testing the knowledge that has been gained in studying the text. These exercises alone are enough to make every psychologist Dr. Thorndike's debtor.

Descriptions of experiments to be made, special topics to be studied and a selected list of references add greatly to the value of the book as a text, as do also indexes of illustrations and experiments in addition to the general index of names and subjects.

In the matter of illustrations, the book is incomparably superior to any other elementary psychology. Over half of the pages devoted to physiological psychology are partially or wholly covered with beautiful plates reproduced from the drawings of original investigators. Many students have a strong tendency to visualize mental processes and these plates will enable them to do so in a more rational way and at the same time to get a clearer idea of the nervous system and its physiology than a much larger space devoted to description could do.

Although the space devoted to classification and definition is much less than in the average text-book in psychology, yet the grouping of all these classifications in the first part of the book gives one at first the impression that classification is unduly emphasized—an impression later found to be wholly false. The classifications are enlivened and made effective by the exercises in classifying well-selected concrete examples. Pedagogically it is always undesirable to spend much time in classifying unfamiliar material, hence only the minimum of classification necessary for the student to proceed intelligently should be given at the start. The reviewer is, therefore, of the opinion that the classification of the 'Connection of Mental Facts' given on pages 12 and 13, however necessary to the author, will be an unnecessary burden and perhaps a source of confusion to the young student.

As a whole the book marks the greatest advance in the teaching of psychology that has been made since the publication of a psychology by Professor James (who, by the way, writes a very appreciative preface for this work). Professor James brought psychology down from the clouds, separated it from philosophy and showed it to be a part of life. Dr. Thorndike has made as distinct an advance in making the study of psychology educative material of a high order. He has made it forever impossible for writers of text-books in psychology to write as they have done, with little or no thought of the needs of students and teachers of

the subject. It would be absurd to say that he has made a text-book perfectly suited to all students and teachers of psychology, but it is perfectly safe to say that no other psychology has so many merits as a text for use in colleges and normal schools. A distinct advance in the teaching of psychology will surely result from the publication of this book.

E. A. KIRKPATRICK.

FITCHBURG, MASS.

Locke's Essay Concerning Human Understanding. MARY WHITON CALKINS. Chicago, The Open Court Publishing Company. 1905. Pp. xiii + 342.

To the valuable series of philosophical classics which the Religion of Science Library offers in inexpensive form there has been added a condensation of Locke's Essay by Miss Calkins. The editor's work has consisted primarily in the selection of the portions of the Essay to be printed, her purpose being to present the 'essentials of Locke's teachings in metaphysics and in psychology.' The first and third books, with the exception of the introductory chapter of the first, have been omitted, the former, 'because the innate-idea controversy is a dead issue' and the latter, 'because it deals with the logical and historical considerations.' The greater part of Book I. and a considerable portion of Book IV. have been retained.

Teachers of the history of philosophy who believe in putting their classes into the reading of the philosophers' own writings, and who at the same time seek to make such study contribute as directly as possible to present problems, will welcome this book with its judicious selection of materials.

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Le problème du génie. F. MENTRÉ. *Revue de Philosophie*, June, 1905. Vol. V., No. 6, pp. 649-682.

This is a review and criticism of Draghicesco's recent work, 'Du rôle de l'individu dans le déterminisme social.' The author of the latter attempts to resolve three connected antinomies: that of socialism and individualism (positive sociology and liberalism), of the individual and of society, of genius and the crowd. In treating the sociological conception of genius three methods are available: the first (Lombroso), the physiological, which studies the great man's heredity and temperament; the second (Séailles), the psychological, which attempts to bridge the gap between the genius and the ordinary man by exhibiting the gradations in mentality; the third (Draghicesco), the sociological, which places the genius in his environment and studies him in his social functions. In this last two groups appear: one (Emerson) exalts the heroes and conceives history as the work of great men; the other (Macaulay) lessens the rôle of the genius and emphasizes the collective achievements of obscure men. To resolve the antinomy between the school of the superman, that silhouette of genius, and the school of historic materialism, Draghicesco asserts that the mass forms the hero and the hero in his turn transforms the mass; both the individualistic and the collectivistic theses are needed to explain the formation and rôle of the great man, who

is at the same time a product and an agent. In its three classes the genius is a synthesis of the collective life: (1) the great general condenses in his person the merits of his subordinates, the statesman is an 'extract' of the social life; (2) the capitalist accumulates the product of the work of others, monopolizes the economic power of a mass of producers; (3) the inventor accumulates previous discoveries, the philosopher the speculations of centuries of thought, the artist the emotional life of an epoch. In brief, great men are not isolated figures: they appear only in great societies, and in periods of exceptional political and economical prosperity; they profit by anterior circumstances, birth, heritage and exceptional advantages. In fine, great men, generally fatalists, are conscious of a social determinism which operates in them and by them.

This collectivist view tends to a democratizing of genius which Mentré attacks as the author's weakest point. Society may suppress the eccentricities of great men (Baldwin), but it scarcely follows a gradual process of leveling down geniuses. Nor is genius merely a transitory phenomenon, intermediate between the primitive chaotic period (biological or prehistoric phase) when man was simply engaged in the satisfaction of his immediate wants, and the future (social or post-historic phase) when through a general diffusion of genius humanity shall calmly and methodically pursue the accomplishment of great designs. Such a philosophy of history is dubious in the light of the varieties of psychological endowments of social environment and the general complexity of human knowledge.

I. WOODBRIDGE RILEY.

JOHNS HOPKINS UNIVERSITY.

JOURNALS AND NEW BOOKS

THE PHILOSOPHICAL REVIEW. May, 1905, Vol. XIV., No. 3. *Truth and Practice* (pp. 265-289): A. E. TAYLOR. - A careful and forcible exposition of the central error of pragmatism—the confusion of logical meaning with the psychological processes by which individuals become aware of logical meaning. *The Content and Validity of the Causal Law, II.* (pp. 290-307): BENNO ERDMANN. - "The connection between each definite cause and its effect is an empirically synthetic one. The necessity inherent in the causal connection demands only that there shall be something fundamental in the constantly preceding *a* which makes necessary the appearance of *b*; it does not inform us what this efficacy is, nor how it brings about the effect. Finally, every induction depends upon the presupposition that the same causes will be given in the reality not yet observed as in that already observed. This presupposition is not a necessity of thought." *Conceptual Completeness and Abstract Truth* (pp. 308-321): H. A. OVERSTRUT. - The author contends against the view that there can be no truth except in the light of the whole. He defends the Aristotelian conception of the irreducible uniqueness of the several categories, and undertakes to show that even the Hegelian dialectic is essentially a move-

ment of supplementation rather than of transformation, and that it is of such a nature that the lower categories remain absolutely true in their own partial spheres even after the higher categories are obtained. This is a very important refutation of the Bradleyan type of Hegelianism. *Pragmatism and its Critics* (pp. 322-343): A. W. MOORE. - An extremely lucid and temperate defense of pragmatism. The author urges the truth that the objectors to pragmatism persistently overlook the fact (1) that their definition of truth is realistic and dualistic, (2) that it is totally sundered from their criteria for detecting truth in all concrete cases. Reviews of Books: Rudolf Eucken, *Geistige Strömungen der Gegenwart*: A. C. ARMSTRONG. F. Pillon, *L'année philosophique*: G. M. DUNCAN. Hugo de Vries, *Species and Varieties*: E. G. SPAULDING. Notices of New Books. Summaries of Articles. Notes.

THE PHILOSOPHICAL REVIEW. July, 1905, Vol. XIV., No. 4. *Philosophy in the Nineteenth Century, I.* (pp. 403-428); G. T. LADD. - "(I.) A statement of the problems of philosophy as they were given over to the nineteenth century by the Kantian critique; (II.) a brief description of the lines of movement along which the attempts at the improved solution of these problems have proceeded, and of the principle influences contributory to these attempts." *Philosophy in France* (pp. 429-455): ANDRÉ LALANDE. - This article describes in a very interesting way, first, the organization of philosophy in France and its place in the curricula of the various colleges; second, the main tendencies of recent French philosophy in their relations to previous tendencies and to contemporary movements in other countries; third, the papers contributed by French philosophers to the international conference at Geneva. *Traité de l'infini crée* (pp. 456-471): NORMAN SMITH. - This article is the translation of a treatise probably written in the middle of the eighteenth century by the Cartesian philosopher and theologian, Abbé Jean Terrasson, and falsely ascribed to Malebranche. It argues for the infinity of the world of matter and spirits as evident in itself, and as a necessary implication of the infinitely infinite power and goodness of God. Reviews of Books: G. S. Fullerton, *A System of Metaphysics*: A. E. TAYLOR. James Rowland Angell, *Psychology: An Introductory Study of the Structure and Function of Human Consciousness*: FRANK THILLY. - G. Vorbrodt, *Beiträge zur religiösen psychologie*: GEORGE A. COE. Herbert Nichols, *A Treatise on Cosmology, Vol. I., Introduction*: E. A. SINGER. Notices of New Books. Summaries of Articles. Notes.

Calkins, Mary Whiton. *Der doppelte Standpunkt in der Psychologie*. Leipzig: Veit & Comp. 1905. 8vo. 80 pp. The volume may be obtained from C. A. Köhler, 149 Tremont St., Boston.

Couturat, L. *L'algebre de la logique*. Paris: 1905.

Del Vecchio, Giorgio. *I presupposti filosofici della nozione del diritto*. Bologna: Zanichelli. 1905. 8vo. 188 pp.

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NOTES AND NEWS

The Kantgesellschaft has announced the following conditions governing the prize which it has offered for the best essay on 'Kant's Conception of Knowledge Compared with that of Aristotle': (1) Time when essays are to be submitted, October 1, 1906. (2) The essays, marked 'Preisaufrage der Kantgesellschaft' are to be sent to the Kuratorium, the University of Halle. (3) The announcement of the award will be made on Kant's birthday, April 22, 1907, at the general meeting of the 'Kantgesellschaft' in Halle. (4) The successful essay will receive the prize of 500 M. If the means of the Kantgesellschaft in 1907 allow, the amount of the prize may be increased and second and third prizes may be offered. (5) Every essay is to be signed with a motto. The name of the author is to be enclosed in a sealed envelop marked with the same motto and attached to the essay. (6) To every essay must be added an exact index of the literature used as well as a detailed table of contents. (7) Only plainly written MSS. will be accepted. It is recommended that MSS. be typewritten. (8) The essay may be written in German, English, French or Italian. (9) The judges of the contest will be: Geheimer Rat Professor Max Heinze of Leipzig, Hofrat Professor Dr. Alois Riehl and Professor Dr. Hans Vaihinger of Halle. (10) The editors of the *Kantstudien* are authorized, but not obliged, to publish the successful essay in their journal. Competitors for the prize need not be members of the Gesellschaft.

THE *Révue de Métaphysique et de Morale* for July, 1905, announces the death of Professor A. Hannequin, of the University of Lyons, and of the Abbe Charles Denis, editor of the *Annales de philosophie chrétienne*. Professor Hannequin was among the first French philosophers to undertake the critical study of the concepts of science, which constituted, together with the history of science, his primary interest through life.

THE Libreria Editrice Lombarda, Milan, announces a series of translations which may have a certain value for readers of Italian. The present announcement comprises Novalis, Guyon, Plotinus, Meister Eckhart, Iacopone da Todi, S. Teresa, Orpheus and Jean Paul Richter.

THE council of the University of Liverpool has instituted a lectureship in experimental psychology. The work in psychology will, for the present, be carried on in the physiological laboratory.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE FUNCTION OF SCIENCE IN SHAPING PHILOSOPHIC METHOD

PHILOSOPHY is first of all *Weltanschauung*; it becomes epistemology and metaphysics only by interplay with a gradually segregating body of science. Thus it has come about that in the adoption of its method philosophy has been an imitator. Impulses of thought powerful enough to attain historic dimensions have been in their first intention philosophical; but of the immediate issue whatever has been most readily circumscribable in its domain and formulable in its procedure—the sedimentary portion, in a word, which we comprise under the rubric ‘science’—has taken precedence in the estimate of epistemological reflection. Certain prepossessions from this source, those of mathematical method and of the mechanical type of atomism, for instance, we have definitively recovered from; others are still with us. Empiricism and rationalism are both methodic schemes which have been defined in the attainment of scientific self-consciousness; whenever epistemology has made general propaganda of either it is the scientific mind that has been in control.

Philosophy has always to learn from science; but what it has to learn is, briefly stated, itself. If at times, and especially during the last half-century, it has seemed caught like a rear-draught in the wake of the tangibly successful truth-seeker, it is to find itself eventually the impelling wind. The office of science is transitional. It is, nevertheless, an indispensable office, and not alone historically so: apart from a material connection between their methods science could not serve as ferment and bearer of the development of philosophy to the point of self-knowledge. The method of knowledge in general is describable, if at all, in terms of the object of knowledge and of the nature of the knower; whatever is peculiar to the method of philosophy must be determined as a function of the peculiar character of its objects: the dependence of epistemology on *Weltanschauung* thus provides a clue to estimating the place of science in

philosophic knowledge.¹ It is the business of the present paper to trace and define the connection thus outlined.

I. THE WORLD AS A WORLD OF PURE EXPERIENCE

The thesis that reality, in so far as knowledge can have anything to do with it, is coextensive with experience has been made a cornerstone for epistemologies of widely unlike stamp. If it is claimed as especially harmonious with empiricism it must be on the strength of an assumption that the method of knowledge is not only some function of the object of knowledge, but some function which ties method and object very close together.

The peculiarity of empirical method does not lie in making presentation the prime thing in knowing. Cartesian rationalism does the same: its 'clear and distinct evidence' is *presented* evidence; the observing, even the receptive consciousness, is the fundamental function. The only thing which distinguishes an empiricism such as that of Professor James from rationalism of the Cartesian type is that the former limits the *validity* of every judgment to its psychological career. Summation of experiences within experience is the empiric mode of progression, and summation is ideally never complete: wholes can never be presented. Hence James accurately makes the defining mark of empirical method its procedure from parts to the whole (if there be a whole), and its rejection of the procedure from the whole to the parts. Could we at any time presume to be in actual presence of space as a whole, of the triangle *überhaupt*, of the world in its intrinsic totality, the distinction between empiricism and rationalism would vanish.

What checks the assumption that we *are* at any time in presence of the whole (species triangle, let us say) is only this,—that all thought must be limited by the psychological coefficient of thinking. To the empirical conscience a touch of the inevitable 'here-now' robs of all absolute virtue an 'in presence of'; active knowing must be a process of *spreading*, not one of weaving within a given universal frame. Rationalism errs, therefore, in so far as its process outstrips and distinguishes itself from its material. The empirical domain of knowledge is experience; its process is—experience. The method of knowledge is indeed a function of its object, it is simply the dif-

¹ Awareness of the dependence in question is most vigorous in contemporary empiricism despite its vow to be without presuppositions in its theory of knowledge. The reason for this paradoxical position lies in the fact that empiricism is polemic and critical; it is relatively sophisticated; it is a *return* to experience; whereas spontaneous philosophizing is rationalistic. The more radical empiricism becomes, the more visibly does it lean upon its characteristic view of the world.

ferential of development of that object. Experience as object is *experiencing* momentarily regarded as static and composed; the difference is one of aspect only. In this respect empiricism is always *Identitätsphilosophie*.

The motive to this definition is not far to seek. For true as it is that empiricism has in it a strain of freedom which recommends it to the spirit of adventure in philosophy, still deeper in its temper is the note of prudence; it is experience that teaches us to refrain from *a priori* constructions. Our present speculative impotence is the achievement of empirical science in breaking the spirit of philosophy: empirical philosophy erects into a principle the inhibition thus inculcated. We are called back to experience. By whom? By experience itself. The situation is that of a teacher referring to himself as ultimate authority, and this circle is inherent in empiricism. Such a circle is not in itself a discredit; it means only that the view of the world as a world of pure experience is not sufficient to create any presumption in favor of that theory of knowledge.

II. THE WORLD AS A PLURALITY

A pluralistic world, if such were possible, could be taken only empirically. Empirical procedure can indeed do nothing to establish the truth of pluralism, for any evidence must come in the form of contradiction between part and part, or of lawlessness proven in presence of known law, whereas the precedence given by empiricism to the presented particular over the universal makes such conflict impossible: the uncertain universal always yields. But, on the other hand, may not a pluralistic Weltanschauung lend support to empirical method?

Experience as a whole is of all wholes the unattainable *par excellence*. Empiricism may properly speak of 'an' experience and of 'experiences'—but never of 'experience.' Experiences may be comprehensive to any finite degree; experiences of the most various spans and ranges may be woven simultaneously into the mesh of any personal continuum: but each one of them has its limits, be they sharp or vague, constituted by the moment of attention or reflection. Beyond these borders the authority of the insight given in the experience ceases; pretended knowledge of necessity holding good across such borders empiricism resigns, and calls upon all to resign. To the next experience its own world is given anew, and well for habit and action if it turn out to have a structure pragmatically congruous with that of the preceding experience.

The nature of a possible alliance between empiricism and pluralism becomes apparent. If in declaring for pluralism we suppose

ourselves to be making assertions about some metaphysical prime mover of experiences different from themselves, we are simply erecting the admittedly fragmentary nature of psychological experience into an assertion of the fragmentary nature of the world, our own imperfectly responsible bearing toward the parts of experience into a proposition of their irresponsible bearing toward one another. But if we adhere to our definition of reality as pure experience, our pluralism is nothing else than a further exposition of our empiricism. It can offer the epistemology no external support, for the epistemology is the source of the *Weltanschauung*, and of one piece with it.

III. THE WORLD AS FLUENT AND PROLIFIC

Of positive significance for method is a phase of the world whose distinctive value is easily lost sight of in the sweep of pluralism: it is the genuine prodigality of the world, the 'superabundance of life' as different from its 'confusion.' This fertility is not to be described as an assembling, out of the void, of experiences accidentally twinkling into existence, but as a growth and sprouting from the present world as a nucleus, a central hearth and brooding-place.² Pluralism legitimately expresses the between of experiences, the moment of segmentation and discontinuity in all transition; but fertility expresses a degree of belonging-together of new and old, a moment of connection in the very material, not alone in the form, of experience.

The prolific world is averse to a world whose character is exhausted in its *subsumedness* under a fixed scheme of premises,—in a word, to the world of the finished system. Now rationalism and system are inseparable. System is not only consummation of rationalism: it is inherent in the procedure. Any bit of knowledge which pretends to have grasped a whole is *in potentia* a closed system with reference to its own defined phase of the world: it is prophetic, even despotic, presuming to govern an infinitude of possible experiences, if not without the consent of the governed, at least in advance of such consent. Along that vista, the whole meaning of the future is exhausted into the present.

The rigidity which empiricism feels in system is largely the claim of this too complete anticipation. The very fluency of experience cries out against it. For as experience has a time-factor,

² The pluralist often speaks as if in the growing world enhancements of reality took place beyond the region of those assemblages called minds, and then, as from a distance, associated themselves with these assemblages. The violence thus done to empirical principles is quite gratuitous: in all strict empiricism, mind is the brooding-place of the world within which accessions are constantly developing.

and as this time-factor is determined by the continuous irruption of the unanticipated into the field of consciousness, the system valid for any moment can not be the system closed in any prior moment.

May it be that each moment has its own system? The conscious adoption and prosecution of methods aside, is there any escape from that inveterate disposition bred in the blood of every experience to *be* a system, and a system which touches absolute wholes? To the perspective of empirical psychology the instinct, if we may so speak, by which each experience as it comes places itself under an all-covering sky inherited from its predecessor and to be imposed upon its successor is an unexplained marvel: but if it is real, it is possible; and if it is possible, something about it is necessary.

The solution of the difficulty must lie in determining the sphere within which conflict could possibly occur between a new experience and an established system. It is clear that experience which enters merely as presented material can come into no conflict with the system of the previous moment: it can only displace other material. And likewise, only system can conflict with system. Empirical openness to a range of new experiences (in science or travel, in history or adventure, literal or spiritual) is not an unloading of system to make way for the volume of entering material; it is a mobilizing of system to encourage re-formations within its structure.

The conflict of fact with system from which empiricism argues does not exist. But conflict exists, and how is it to be explained? To feel the resistance of system, a new experience must be itself a system; a fact simply as sensation can answer no question, but it can be raised to the significance of a type; experimental conditions are conditions which endow the particular instance with the power of a whole, and they are conditions defined by and representing an existing system of wholes. Only an existing whole could thus empower a fact; and, on the other hand, *given the existing whole, facts inevitably acquire the force of wholes*. In the presence of system every incoming experience takes on as if by induction the aspect of counter-system. It is evident that an encounter in which the facts derive all their opposing power from the system in which they are to effect changes can not issue in the demolition of system, nor in its discredit. Hence the foe of empiricism in this respect is not rationalism at all, but an energy-factor, the inertia of internal readjustment; and empiricism instead of a theory of knowledge here appears as an ethical principle, demanding energy and agility in reconstructing hypotheses. Here lies the real conflict.

What is of strictly epistemological value in the contention of empiricism is the definition of the laws of encounter between system

and experience and the consequent readjustment. They may be briefly put thus:

1. When a system is confronted by new experience the system developed in the new experience stands to the original system in the relation of (1) congruence or (2) incongruence or (3) addition, or two or all of these.

2. In the first case the systems pass to coalescence: the fact is said to be 'understood.'

3. In the second case the first system is altered in part and partly remains unaltered. The alteration takes place upon the principle that the original system must yield to the system of the newly presented fact at whatever cost to itself: this is the fundamental postulate of empiricism. The fact becomes understood by determining the system, the presentation containing an absolutely fixed point. But in order that the new system shall be definitely determined there must be another fixed point, namely, some whole in the original system: this is the fundamental postulate of rationalism.

4. In the third case the original system is not altered, but *further determined*. The new fact as new is not understood, but becomes the ground for understanding further experience. This is the primary process of growth; and as the new acquisition becomes active in understanding more of its own kind, its characteristic wholes and particulars define themselves.

The relation between empiricism and rationalism thus appears in a new light:

1. These two methods historically pitted against one another are both necessary in experience.

2. The relation between them is not one of mere alternation, nor is it a disjunctive relation in such sense that the more of one we employ the less we rely on the other: this is true of the conscious employment of method but not of the actual work of experience.

3. The relation is one of concomitant variation: the two methods are direct functions of one another, so that as the scope of one widens, that of the other must deepen. Our empiricism is a measure of our abundance; our rationalism is a measure of our selfhood in presence of that abundance. For the system of any moment is the 'self' of that moment.

IV. THE WORLD AS SUPRA-RATIONAL AND INFINITE

Current empiricism has not rejected all alliance with system. It has stood only for a democracy of individual experiences, such that unifications in general shall give precedence to facts in general. The gradual extension of system, tightly woven at the level of

sensible fact, increasingly unfinished and revisable as the wholes in question become complex, abstract, comprehensive, it inclines to assume as part of its own province. It identifies itself, in brief, with the method of natural science.

The wholes which philosophy is interested in securing for knowledge are precisely those which in the empirical order should be last of attainment, and according to the scale of scientific assurance most hypothetical and liable to revision. But philosophy has attributed to them superior certainty and stability: its special mission is taken to be the establishment of truth both universal and necessary, that is, the determination of wholes which incoming experience can have no tendency to modify. The scientific system is most fixed at the level of physical fact, and increasingly open above; philosophic system is in its nature *closed at the top*.

Such a position opposes empiricism in its last depths. Not system is its ultimate aversion, nor even the pretended knowledge of wholes, but the pretended knowledge of ultimate wholes, assertion of the finishedness of the infinite. Against such pretense it makes the final appeal to its *Weltanschauung* and exhibits its own final meaning. The whole cult of the given is at heart an assertion of the final impenetrability of existence. Givenness is the darkness, the silence, the inexorableness of what is. In data of wider scope the possibility of solution is excluded by the nature of reason: let reason with its necessities and its symmetries face the irregularities of natural configurations, the chaos and evil in the very world of spirit, —they are incommensurable. Against all fixed optimism, intellectual and moral, empiricism declares the fatuity of assurance: necessity, if there be necessity, has its roots nowhere nearer than in the absolute,—our cleverness has not surprised its secret.

There is more truth and depth in this view of the world than in many a facile monism. But in spite of the truth, there is not lacking a strong presumption that the knowledge of these very ultimate wholes must be within our reach. We have observed that the system of any moment is the self of that moment. It follows that the continuity of system from one moment to another is the measure of our personal identity. If, then, we have any persistent identity throughout the whole series of our experiences, there must be certain wholes, such as space, the physical world, the conscious other, experience itself, which are invariant for knowledge, which, as placers and interpreters of all incoming experience, the course of experience can have no tendency to modify. We are thus driven, as before, to ask what is the precise logical force of that view of the world which empiricism at last depends on.

First of all, to say that an infinitely distant goal is attained by methods having a finite rate is a manifest contradiction. If the rationalism which philosophy practises is identical with the rationalism of natural science, there is an end to the matter. The wholes which natural science projects are admittedly divined, hypothetical, not absolutely known. It is an essential characteristic that they be flexible and replaceable. They are not *knowledge*. And in fact, the chief root of the aversion to system is this: that it adopts the method of hypothesis, and then asserts certainty. It is the note of constructive ingenuity that is more than anything else resented in philosophical system.

Constructive ingenuity, the living spirit of physical method, is even there exotic. The objects which properly invite ingenuity in analysis and ideal reproduction are things which have been ingeniously put together. There is the same propriety in so regarding the physical universe that there is in regarding the circle as a function of chord-structure. Scientific hypotheses are a method of infinite progression toward expressing physical nature in terms of contrivance. From this point of view, anything that can be regarded as a composite, or as a resultant, or as an effect, is open to attack by the constructive imagination of science.

If physical nature is thus only in an accommodated sense open to approach by constructive imagination, how much less the complete nature, the object of philosophy. Whatever savors of inductive cunning in philosophy must fall under distrust. The system of Leibniz, liable as few others to mechanical interpretation, strikingly illustrates how metaphysics fails of inspiring confidence in proportion as its ingenuity excites admiration. Kant himself, exercised more than any other to keep apart the methods of science and transcendentalism, falls into offense when he expresses the latter as inference from the phenomena of knowledge to their necessary conditions, a method suitable only to effects and resultants. In so far, then, empiricism in its rejection of system is in perfect right; the universe is not a composite nor a resultant nor an effect; the rationalism of natural science is out of place in philosophy.

In the second place, empiricism points truly to a certain disparity between the experience-value of any system and the experience-value of any fact. System is related to fact on the one side as infinitude to finitude, for its range is eternity, while that of the fact is the psychological moment; but, on the other side, system stands to fact as finitude to infinitude, for the fact is inexhaustible while system reaches only a limited number of its phases. There is more in any fact of experience than our rationalisms discover, and, on the other

hand, we may easily rationalize out of a fact more than it will support. In these truths we have the real ground for the fundamental postulate of empiricism defined in the last section: the adjustment of the infinitude of the universal to the infinitude of the fact is an endless problem, and fact must be the prime mover in bringing about that adjustment. System is inert; it sees beyond itself only by the aid of fact; it grasps wholes, but is unable to finish their definition; it has no internal power either of growth or of correction. It is in the fact, in the infinitude of the not-yet-subsumed, that the *life* of system must lie, and thus the present system must always yield to the system of the incoming fact.³

There is nothing here which negates the knowledge of ultimate wholes, and the claim to possess this knowledge seems less preposterous when its infinitude is seen as the mere nucleus and clue of the finite self in presence of unfathomable reality. The positive proof that we have such knowledge, that the discontinuity, the fertility, the very unfathomableness, of the world are known only as held within an experience, so that to every partiality that can be alleged in knowledge there can be shown a prior wholeness, I need not undertake in detail. It is striking that that supra-rational character of the world in which the essential meaning of empiricism is rooted, is a character which is least of all discoverable from an empirical standpoint, since the defining character of the empirical world is that it lies all on the surface.

The result of the argument, constituting a platform for a direct study of philosophic method, may be summarized as follows:

1. Neither scientific empiricism nor scientific rationalism is a position of stable equilibrium in knowledge, and neither can be identified as the method of philosophy. Neither can accomplish, though neither can dispense with, the knowledge of wholes.

2. There is no such thing, strictly speaking, as 'an' experience having limits. In every experience of spatial objects, we are actually *in presence* of the whole of space: there is but one continuous experience of space for any individual life. As the perspective center of any moment is a point from which all of space may be

³As always in empiricism, so here, the ethical mingles with the purely theoretical. The old system, *i. e.*, the accomplished structure of self at any moment, tends to deny the new, not by inherent opposition, but simply by being in possession. It is often willing to think little of the world for the sake of compassing it within the acquired construction, for departure and readjustment require energy. Empiricism holds that it is better to spare energy on the connections and give it to new structure than by a false loyalty to miss the fullness of things,—it is better to have wealth with looseness than unity and poverty therewith: so the sentiment of the proverb is reversed.

reached by continuous variation, space itself being the invariant as perspective changes, so the relation of any other whole to any other particular belonging to it is a presence with the particular by virtue of a differential of continuous variation.

3. The self of any moment of experience is a system of these invariant wholes. Every growth of experience adds to the sum of this possession, so that the body of our *a priori* knowledge is not a static and forever fixed total (as Kant regarded it), but an eternal evolution.

4. These wholes are *given* with experience. Space, the physical world, the world of ideas, the absolute, are quite as *near* in pure experience as the sensation.

5. The work of philosophy is to recognize and define these wholes. Its process is the consummation of empiricism,—empiricism without limit, still more radical,—and of rationalism.

6. For these wholes constitute at once the beginnings and the limits of the infinite series whose construction is the work of science. Both ends of such series must be given, in order that the direction of the series may be determined and the goal identified. As line and curve are both given in this sense, and each may be regarded as the limit of an infinite structure whose elements are of the other, so, for example, are idea and motion both given elements, heterogeneous, in terms of each of which all definable characters of the other may by infinite construction be represented. We may build the framework of our physics from sensations (Mach), or of our psychology from mechanics, outward.

7. None of the wholes is intrinsically more simple than any other.

8. None of them has any superiority as knowledge, or as point of beginning.

9. For neither part nor whole has any inherent knowledge-value. The givenness which is the mark of our passivity in knowledge and of the ultimate darkness of the world to us, is also the mark of *finality* in knowledge; but the given is neither beginning nor end apart from the work of science which fills the field between given and given. Light and penetration exist for us only in so far as we are active; thus both the wholes of philosophy and the particulars of immediate experience derive their knowledge-value from relation to the intermediate scientific structure.

WILLIAM ERNEST HOCKING.

THE UNITY OF MENTAL LIFE

THE attacks on the theory of association as 'atomistic' imply a more or less unitary consciousness which is given as a postulate, as 'selbstverständlich.' I shall here endeavor to find out how far unity of consciousness is possible, such unity being considered in its entirety, as temporal from its beginning to its present existence; in sections, as partially temporal, *e. g.*, from day to day; and, finally, as a single moment.

From the results reached by contemporary psychologists, we may say, that (1) all we have at any instant is the present moment, whether such moment have past or future reference, and (2) any explanation of such present moment may, in crucial instances, descend to the particular terms of present objects, instead of the more general psychological expressions. In discussing the unity of consciousness, therefore, it becomes necessary to show how such unity if existent, is contained in, or represented by the present moment.

It requires no special acumen to see that even as a memory, unity of consciousness as a temporal whole, in its entirety, is scarcely possible. Gaps occur here and there, certain positions are not accurately placed as to before and after, and sketchiness of the worst kind prevails. Some previous states, treasured in the memories of others, are not even recognized by the person concerned. The fictitious unity which might be possible as a series of images is, even as such, broken, scrappy and sketchy. We must move our inquiry nearer the present if we are to find unity at all, for unity with the entire past, even if of a representative and schematic character, there is none.

Taking now any section of past states close to the present, we may represent such section by a series of images, *a, b, c, d, e, . . . etc.*, which pass before us. Each passes and is succeeded by the other. Each one as it passes, however, acquires a certain meaning because of its relation to the one preceding; and the final one sums up the rest. The series would then become, *a, bm, cm¹, dm², em³, . . . etc.*¹ The final mental state has implicit in it, as it were, all the preceding states; its serial meaning stands for whatever of the preceding states we choose to call a complete series. The preceding states are not contained in the present state, in the sense of a condensation or an amalgamation, but the meaning of the present, as serial, is sufficient to determine the series, if we wish to explicate the present moment. When the meaning is to be 'unrolled' so to say,

¹ See Stout, 'Manual,' 2d ed., p. 94.

the series can again be revived as far as is necessary. All there is is the present moment, and representing such moment, or whatever in it relates to the series in question, by p , pm^n would constitute whatever serial unity exists; the series is implicit in the meaning of p .

In the actual moments of its existence, the various members of the series may be broken, *e. g.*, by sleep, by interruption from external objects, stimulation, or the like. We might represent this by a , bm , $-cm^1$, dm^2 , . . . etc. Such interruption, however, would not interfere with the unity of the series as represented by pm^n . If the interruption in no way interferes with or affects the meaning of p , as the present representative of the past moments, serial unity would still be intact. The summation state might be simply consciousness of a word or of a sentence.

All the past mental states can not however, all be adequately represented by one single series; rather a number of series exists, different groups of which form different systems. The mere fact that interruption of any single series is possible, implies the existence of a single state or series different from those interrupted. What we would then have, as thus far considered, would be a number of unified systems; or, to put it differently, a number of potential unities of consciousness, these existing as dispositions. As such, these unities may be, and in many cases are, distinct and separate; but being experienced by one person, they are necessarily considered as one totality; as belonging to one person. I shall return to this later.

There now remains to be considered wherein consists the unity of the present moment, whether, in such moment, we have impressions or images. In what manner can it be said that the various impressions streaming in form one; and even in one kind of impression, *e. g.*, visual, how far is unity possible? In any single visual field there are perceived a number of objects, distinct and separate; and yet the whole field seems as one. I see the objects before me as objects, and also as forming one totality. Upon closer examination, however, I find that it is only visually that I have unity; only upon the addition of discrete motor impressions do I have a number of distinct and separate objects. I do not, for example, see the books before me on the desk as books, till I turn my eyes towards them, or become conscious of them separately. Without this added consciousness, whether present or revived, I have simply a visual something, without parts or separately contained unities. This visual something becomes chopped up into parts, as it were, by the added motor elements.

In the visual field, therefore, as usually considered, we have co-

existing two kinds of impressions, visual and motor. It is customary to speak of one moment of consciousness, as if consciousness were one pulse of feeling, or what not, containing a number of qualities, etc. This, however, appears to be a relic of the older philosophy, and is not the actual experience at any moment. It seems better to speak of concomitant moments of different kinds of consciousness. When I see a book, my visual impression *per se* remains what it is, and, as visual, in no way changes or fuses with my tactile impression when I touch it; the two remain distinct and separate. So, too, when I tap it, the auditory is something distinct from the visual or the tactile impression, and no more fuses with them than they do with each other. It might be objected that this would result in as many kinds of consciousness as we have kinds of impressions, *e. g.*, in the visual, red, blue, green, and so on. Strictly speaking, this is true. But in any one kind there are certain characteristics which lead me to lump them together under the term visual; my other knowledge also aids in this, as of the single end-organ, more or less definite brain centers, etc. There is, however, no such similarity between the visual and the tactile, or visual and auditory; and, moreover, they can coexist together. When they occur together, considered as such, they constitute so many different objects. When, however, I take only one attitude towards all three, I stamp the object as one and external. The whole combination aids us in stamping the object as real and external; though we may react to three objects, *viz.*, visual, tactile and auditory for some special purpose, if necessary.

It is probable that unity of the visual field of consciousness has greatly influenced those who consider consciousness as a unity, as a whole. But if we examine auditory or tactile consciousness, such unity is not shown. Sounds come by fits and starts, as do tactile and other sensations; any unity they have as such must be of the serial order. A fictitious unity is given them when they occur in a visual background, or are set against a body feeling which in different degrees is always present. But taken in themselves, the former impressions are discrete, and unity only as serial is possible.

If we have moments of consciousness in the present only, how account for the continuum of consciousness? Granted a unified visual field, how do we pass from moment to moment? We see no gaps; the present is always with us; and even in a changing visual field there is a continuum. So too we have a continuum in the body feeling before referred to; though the rhythmic processes add a serial unity to the unity of the present, to the feeling of the body as a whole. We can not, however, on this account, speak of a general continuum of consciousness. There is no continuum in our motor

or auditory consciousness, nor any in our olfactory or gustatory, though these are less important. We may have a continuity within the series as represented by the meaning of the present moment, but there is no continuum as such. Here too we are apt to give the characteristic continuity of the visual field to consciousness in general, though this is obviously so.

We know nothing of any continuum as such, and as a present moment in a present and more or less stationary visual field or in organic feeling. Our attitude, determined by other factors, gives us a before and after. We have, however, such continuum more apparent in changing the visual field either by turning the head or by having a succession of objects presented before us. To describe this, it is more convenient to descend to the particular field of objects and see the state of affairs actually present. In any moment of visual consciousness, therefore, what I have is a field of objects of whatever kind they may be. I see before me, for example, a desk with the usual accompaniments. Now, speaking in the particular terms of objects and leaving aside for the moment the more general psychological expressions, the field before me and seen, consists of a center of most distinct and clear objects with an outlying border. Nothing more than this is meant by the terms 'focus' and 'margin'; these expressions being merely more general than the specific wording here used. I see some books before me most clearly; also some pens, paper, a ruler, knife and what not. At the sides, the outline of the desk is rather hazy, and beyond is a dim, undefined background, whether the wall, door or something else, is not quite plain from the present perception as such. Now I turn to the right. As I turn, the outlines to the right always present, it must be remembered, in the state of consciousness just described, become more distinct, while the dim border recedes further to the right. The objects at first clear become dim and obscure, and disappear in the border to the left; but they are still present and in consciousness during the transition, until their gradual disappearance. I arise and walk to the door. In the same sliding manner, as it were, new states succeed. There is a continuity of objects in the one visual field; for the motor constituents are here also considered. But each one before passing out of view merges into dimness, and gives place to another which was dim when the first was clear, and which became distinct with the passage of the first into obscurity. There is thus a continuum possible by this sliding arrangement; the continuity which exists is due to the passage of an undifferentiated something (the hazy and obscure border) always present into a center of clearness and light.

Whether, however, we have continuity of this close kind, or

whether of the passing moments of motor or auditory consciousness, each consciousness can have unity only as before and after in a series. My present moment is all I have and contains in it all the unity there is possible for the passing states. If, afterwards, by a series of attitudes, I place certain moments in a past order, it is as each one sums up the ones preceding, has an acquired meaning due to its position in the series, and as the last one represents all, that unity is possible. Without the addition of such meaning to each of the succeeding moments, they all must remain discrete and separate.

Each of the present moments as it exists is not a separate entity apart from *me*; it is my present; it has existence only as it is *my* passing moment; and so, too, the meaning in any present moment representing a past series is meaning, not in the abstract, but meaning for *me*. Whatever meaning is present is due to the attitude taken towards the present; such attitude being the reaction itself or the tendency to react in a more or less definite manner. We have, moreover, as long as consciousness is present, as long as the objects are before us, a certain body feeling, a certain awareness of our body in a certain manner. However different any number of series or systems of dispositions may be, whether they become either actually realized or remain implicit in the meaning of some present moment, they all have with them this body feeling, this consciousness of the attitude taken. They thus belong to me; they have no meaning, as far as I am concerned, without me. Certain feelings, certain attitudes approximately alike, stamp the objects in the present as similar, different, past or future, and the like. If any word be present, this word again owes whatever meaning it has to the attitude taken. It is only in this manner that a total unity, unity of the self, has any meaning.

We know nothing, therefore, of any unity other than that either actually existing, or that represented by the meaning in the present, and such unity must be either that of concomitance or that of a series. In the former case, the single background holding together the discrete elements, as it were, is the visual field or the body feeling; in the latter case the series is implicit in the meaning of the present moment. Unity as representative, therefore, can be possible only as serial; for we can have but one present moment; and to bring up the one preceding is only possible when the actual present has the necessary meaning; for the two moments can obviously not be present together. It is with representative unity that the theory of association plays so great a part. It too often has been the custom to approach the subject in a somewhat reverse order. The various constituents of the series are not so many discrete moments which must

be hooked together by some transcendental spirit, as a train guard couples cars. Physical analogy has probably done much to lead us astray. Rather we find such a state of affairs that if we remove association, the states become separate and mean nothing. Serial unity has implied in it association of the different members. We do not add association to the separate moments and then build up our unity. We have whatever unity there is already there; finding in it association, we endeavor to discover some stable principle, laws or forms, whichever the case may be. We have, then, this peculiar state of affairs: unity of consciousness instead of destroying any theory of association, can not exist or be thought of without it. The present moment, standing for the series, has implied in it association of the various members; remove the association, and the series falls into a number of separate, disconnected units. Atomism, instead of being a result of association, is inevitable if we remove association. For convenience sake we treat association as separate, and the different mental states as separate, but in actual existence, such separation has no place. We do not add association to the ideas and get a unity. We have a unity, and for purposes of discussion break it up into ideas, feelings or what not, on the one side, and association on the other.

The moments of consciousness succeeding one another, and giving rise to a series of which each term has implicit in it those which preceded it, may, as above, be represented as follows: a , bm , cm^1 , dm^2 , em^3 , \dots , etc. While we represent the series in this symbolic form, still, as actually existing, one member passes on after the other, and each, as it exists, sums up those preceding in its meaning. Representing the present moment by pm^n , m^n , would symbolize the meaning in the present moment representing the series; and to make such meaning explicit, we would have to go over as much of the series as is necessary. In such a process we do not pass backwards over the series; pm^n rather is the series implicit, and as such begins with a certain member which is taken as the first, and which develops the series as far as is necessary. Once a series has thus been formed, each member, upon a second or other revival, has an additional meaning given it as leading to the succeeding member, previously existent. The series might then be represented thus: an , bmn^1 , cm^1n^2 , dm^2n^3 , em^3n^4 , \dots , pm^n . Taking for example any member, cm^1n^2 , m^1 , would imply an , bmn^1 , leading to cm^1n^2 (not bmn^1 , an , departing backwards from cm^1n^2) and n^2 would represent the tendency of cm^1n^2 to pass on to dm^2n^3 , etc., and n^2 would not be anything never experienced before, but would be the result of the previous successions. In the first member of the series, an , n would tend to pass into the succeed-

ing members, because n is the result of the previously existent succeeding moments. I wish to emphasize this, because in criticisms of associationism this future reference is often taken as an argument showing that something other than association must be present to allow of such future reference, purpose or what not; but this is simply the result of some series which has already passed before.

To make the matter more concrete, the example given by James² is as good as any. As he shows, the word 'ages' has a different meaning because it is in a different series in the following two cases:

"I, the heir of all the ages in the foremost files of time"

"For I doubt not through the ages one increasing purpose runs."

In the one case the forward movement towards 'ages' and the, from-ward, movement onward differ from the similar tendencies in the other instance. It is hardly proper to speak of a backward reference, for the series giving the meaning leads up to 'ages'; and to make the resulting meaning in 'ages' explicit, we do not go over, *e. g.*, 'ages the all of heir,' etc., backwards, but we start at some point, *e. g.*, 'the heir,' and carry it onward towards 'ages.' It is this which gives serial meaning to 'ages.' The reference onward from 'ages' again is the result of previous experience with the entire line, and is not inherent in 'ages' as such. This future reference is likewise the result of a past experience.

There is a danger of confusing the word 'implicit' with some sort of fusion which constitutes the meaning. The meaning in the present moment, as far as the series is concerned, is not the result of a fusion of all the preceding members of the series; it is not necessary to consider each member fused in the one succeeding. Nor need there be any single preceding member present in the moment existing. All we have is this tendency to develop the series, the attitude taken and representative of the series; and this, when developed, when made explicit, will give rise to a series which, of course, will be somewhat modified because of the repetition.³

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² 'Principles of Psychology,' I., p. 567.

³ See G. E. Müller und A. Pilzecker, 'Experimentelle Beiträge zur Lehre vom gedächtniss,' 1900, ch. 6; E. L. Thorndike, 'Animal Intelligence,' 1898, pp. 65-95; H. Münsterberg, 'Beiträge,' Heft 4, 1892, pp. 23-27; G. F. Stout, 'Manual,' 2d ed., Bk. I. cl. II.; W. James, 'Principles,' I., pp. 336-342; A. Binet, 'L'étude expérimental de l'intelligence,' 1903, ch. 4.

REVIEWS AND ABSTRACTS OF LITERATURE

An Essay on Eastern Philosophy. Y. MOTORA, Professor of Psychology, Imperial University, Tokyo. Leipzig, R. Voigtländer's Verlag. 1905. 32 pp.

This brochure is written by a Japanese of western training in halting English, and is printed in Germany with abundant typographical errors. The subject-matter itself is sufficiently subtle to have warranted giving it the clearest presentation possible, at least such a presentation as would have been secured through English revision of the manuscript and proof.

The title is in one sense too ambitious, and in another a misnomer; too ambitious in that not even an essay can present the theme of eastern philosophy in thirty-two pages, a misnomer in that at least half of the pages are taken up with Professor Motora's own views on psychology. The whole is better described as an essay by an eastern philosopher on the psychological interpretation of Buddhism. The Buddhism that he discusses is that of the Japanese type, and particularly that of the so-called 'Zen' sect. The style is confused and disconnected, due in part, undoubtedly, to the difficulty of using a foreign language easily, but also to the author's failure to distinguish scientific from philosophical thinking.

But the whole is interesting as coming from a foreigner with its English dress, as showing the influence of western training on an eastern mind, and as indicative of the growing unity of human letters; it is also valuable in its evident intent of making Japanese Buddhism intelligible to western minds. I will attempt to smooth out in part the expression of Professor Motora's ideas, and at the same time preserve in the following condensation his own groupings.

General View of Eastern Philosophy: By eastern philosophy is meant that of India, China and Japan. The philosophy of each of these nations is distinct, but there are also common characteristics which permit eastern philosophy as a whole to be contrasted with western philosophy. The Hindoo and Buddhistic philosophy of India made Confucianism more metaphysical, and Japan received what both China and India had to give. In logic, the Hindoos early developed an inductive system. In psychology, Buddhism divides human nature into two parts, the changeless and the changing; Confucianism into the good and the bad. In religion, Buddhism has two systems, 'depending-on-another system and self-depending system'; in the former salvation being through the Savior Amida, in the latter through personal contemplation.

The Idea of Self in the Chinese Philosophies: The development of the idea of self Professor Motora finds characteristic of eastern philosophy, but his quotations without interpretation from the Tote-King do not make clear the conception of self as held by Taoism. Mencius maintained that human nature is good, because of the four feelings of pity, shame, altruism, and good and bad; and that it goes astray only through bad influences. Junshi, on the other hand, held that human nature was bad;

others that it was both good and bad; still others that it was neutral. Finally, Shushi, under Buddhistic influence, wrought theoretical peace by dividing human nature into an original nature and the disposition, the former of which was good; the latter was good or bad according to external influences.

The Idea of Self in Buddhism, Especially in the Zen Sect: Buddhism divides mind into the changeless and the changing, the latter being composed of the five senses, consciousness, and the feeling of self. In the Zen sect there is no dividing of mind, but 'by long practice of meditation, man comes to experience such a state of mind, in which there is no representation, and only the pure self remains.' Professor Motora, from a psychological and curious interest, spent a week in a Zen monastery, and reports: 'If I compare the psychology which I had learned up to that time to a plane surface, that experience is like a third dimension.' The sect was originated by Dharma, who went to China to spread it, whence it came to Japan. With eyes closed and mind quiet, or else meditating on some such question as, 'What is your original estate?' the moment of self-enlightenment comes when the mind experiences itself as 'pure activity' (*cf.* Fichte).

Modern Problem of Psychology: The foremost problem of modern psychology Professor Motora finds in the relation of mind and body. But the relation between the psychical and the physical is no more mysterious than that between sequences of physical phenomena. The best we can do, in either case, is to point out functional relations between phenomena, without reaching absolute equality between any two.

A Scientific Explanation of the Zen Sect: This modern Buddhist sect is a practical cult whose mental experiences the author seeks to explain. This sect reaches a direct experience of energy. Since energy is one, psychical and physical energy are both forms of one, and are convertible. "In a word, mind is neither merely a conscious being, nor merely one of activity, but conscious activity accompanied by more or less of feeling-tone." In the Zen experience the mind is kept in a state of general tension, all particular forms of activity being inhibited. As associationism makes mind a series of objects without a subject, so 'Zen' makes mind a subject without a series of objects.

The Relation of the Subject to the Object: Epistemology makes the subject only the knower, but man is also an actor, and just as man both adapts himself to his environment and adapts his environment to himself, so the subject adapts itself to the object, and also the object to the subject.

The Subject as Percipient of the Object and its Selective Function: As percipient, the subject is plastic, and adapts itself to its object. To remain in consciousness, the object must have a power of self-persistence. Representation is a persistent form in consciousness to which the subject adapts itself. An organism is first sensitive, then selective. As sensitive, the subject is percipient; as selective, the object is adjusted to the subject.

The Relation of the Subject and Predicate to Consciousness: Con-

consciousness divides itself into two parts, subject and object, and at the same time consciousness is a resultant of the interaction of the two. This seeming paradox is resolved by observing the distinction between psychological subject and logical subject. Psychologically, consciousness divides itself into subject and object; logically, consciousness is the resultant of the distinction between subject and object.

Psychical Potential and Psychical Reality: These are Professor Motora's terms, coined to show the relation of his psychology to the Zen sect. 'Psychical potential is an hypothetical agent, and must always wait for physiological activity to realize itself to the psychical reality.' The psychical reality is the germ of future psychical development, and includes all psychical activity, being to the author a more comprehensive term than consciousness. Feeling plays the prominent part in the original psychical reality, leading to impulse, and finally to knowledge. The pure state of psychical reality is the result of interaction between external stimulus and the undifferentiated organic being. 'It is the water upon which various forms of waves, as knowledge, desire, purpose and the like, are produced.'

Psychical Reality and Representation: The existence of representation presupposes three things, the sensitive sense-organ with muscles and nerves, the object that gives the stimulus, and the resultant consciousness.

The Development of the Will and Personality: The will is analyzed into three essential constituents, desires, concepts and the physiological mechanism of execution. The essence of personality is will working with a persistent motive and a comprehensive concept.

Concluding Remarks: These are intended to show the relation of the preceding psychological thoughts to the Buddhistic conception of the *ego*. The changeless element in human nature is called Shin-Nyo in Buddhism, the changing element, the senses, consciousness and the feeling of self, is called Araya-Shiki. Professor Motora identifies his 'psychical potential' with Shin-Nyo, and his 'psychical reality' with Araya-Shiki. Shin-Nyo, the world-soul, the eternal and unchanging existence, may be experienced in life before death as 'the direct experience of psychical reality.' Professor Motora confesses in conclusion that the Japanese Buddhist may not be satisfied with his explanation.

The essay leaves several things to be desired. We should like to know how the 'Zen' of Japan is related to the 'Yogi' of India, and how Shin-Nyo of Japan is related to Nirvana. What more, after all, is the Zen experience than a case of dispersed attention, or, at most, self-hypnotism? Too frequently the argument suffers from reliance on analogies; sometimes it is not clear, and at least in the discussion of mind and body the solution is reached too easily by offhand reflection. The author promises us a book, however, which may relieve some of these difficulties.

H. H. HORNE.

An Approach to Philosophy. RALPH BARTON PERRY. New York, Charles Scribner's Sons. 1905. Pp. 250.

The purpose of Professor Perry's book, as indicated by its title and contents, is to elucidate philosophy to readers unfamiliar with philosophical problems and systems. To quote the author: 'the present book is written for the sake of elucidating the inevitable philosophy. It seeks to make the reader more solicitously aware of the philosophy that is in him, or to provoke him to philosophy in his own interests. To this end I have sacrificed all else to the task of mediating between the tradition and technicalities of the academic discipline and the more common terms of life.' Thus the chief aim of the book is pedagogical.

To accomplish this the author outlines his program as follows: "In Part I. various great human interests have been selected as points of departure. I have sought to introduce the general standpoint and problem of philosophy through its implication in general life, poetry, religion and science. . . . I have in Part II. undertaken to furnish the reader with a map of the country to which he has been led. To this end I have attempted a brief survey of the entire program of philosophy. . . . The scope of Part II. is due in part to a desire for brevity, but chiefly to the hope for furnishing an epitome that shall follow the course of the *natural and historical differentiation* of the general philosophical problem.

"Finally, I have in Part III. sought to present the tradition of philosophy in the form of general types; . . . to acquaint the reader with philosophy in the concrete; to show how certain underlying principles may determine the whole circle of philosophical ideas, and give them unity and distinctive flavor. Part II. offers a general classification of philosophical problems and conceptions independently of any special point of view. But I have in Part III. sought to emphasize the point of view, or the internal consistency that makes a *system of philosophy* out of certain answers to the special problems of philosophy."

This program is admirable. There is, however, room for calling in question the advisability of emphasizing the importance of the system and relatively minimizing the importance of the special problems of philosophy. Professor Perry's view is stated very clearly and confidently: "That which lends philosophical quality to any reflection is a steadfast adherence to the ideals of inclusiveness and consistency. Hence, though the philosopher must of necessity occupy himself with subordinate problems, these can not be completely isolated from one another, and solved successively. Perspective is his most indispensable requisite, and he has solved no problem finally until he has provided for the solution of all. His own peculiar conceptions are those which *order* experience, and reconcile such aspects of it as other interests have distinguished. Hence the compatibility of any idea with all other ideas is the prime test of its philosophical sufficiency. On these grounds it may confidently be asserted that the work of philosophy can not be assigned by the piece to different specialists, and then assembled. There are no special philosophical problems which can be solved upon their own merits. Indeed, such problems

could never even be named, for in their discreteness they would cease to be philosophical."

Though the philosopher's ideal is 'inclusiveness and consistency,' he may, and we believe he should, follow a method of investigation whereby he makes each problem a special one, and in which he proceeds from the solution of special problems to the formulation of his system. Those philosophers who have not done this have probably simply taken one problem and allowed its solution to prejudice that of all others. In short, they have been the worst sort of specialists. Thus, if philosophy is to escape the subjectivism of the individual philosopher and to be truly scientific, or objective, her problems must not be the outcome of any system, but must arise from facts universally observable. However, the important question is whether or not the isolation of problems, that is, their careful differentiation from one another and their solution in their own right, has not been the chief means of progress in all the sciences and no less in philosophy. Those who believe that it has, must, in introducing the beginner to philosophy, place the emphasis upon the special problems, their differentiation and their solution.

In its endeavor to attain the ideal of inclusiveness and consistency philosophy must be patient and cautious, as are the special sciences; and in any case it must rest upon the more sure basis, the solution of its special problems.

Then, too, the history of philosophy often reveals the presence of the same problems irrespective of system, and shows us again and again that philosophers have made their greatest and most permanent contributions in their solution of special problems.

Finally, special problems form the real common ground and forum between the various schools; for here we can understand one another and can discuss most profitably the foundation of the different systems.

The convictions thus roughly stated make the reviewer incline to the opinion that an introduction to philosophy—in distinction, be it understood, from a course in the history of philosophy—should devote itself almost entirely to the exposition, elucidation and differentiation of problems, and to their history and solution. The history of philosophy will give an account of the systems, their origin and historical relationships, and of their contributions.

Thus the reviewer would have preferred a much fuller presentation of the subject-matter of Part II. and relatively a much shorter one of Part III. Yet Part III. is especially the portion of the book, practically half, for which the reader will feel grateful to the author. Professor Perry's account of the four chief types of system, Naturalism, Subjectivism, Absolute Realism and Absolute Idealism, is very suggestive, both in its elucidation of each system and in its historical illustration.

The style of the book is in some respects excellent, in others by no means so good. The sentences are individually clear and the author has mediated well 'between the tradition and technicalities of the academic discipline and the more common terms of life.' Still the undergraduate

will probably find Parts II. and III. somewhat dull and far from clear. The sentences are clear, but the sections and chapters as such are not clear. Here it will be hard for the beginner to grasp the subject-matter and chief points, for the lines of thought seem, as one reads, to be continually broken.

All this does not contradict the praise which is the book's due. Its general program is good, it is very suggestive and thoroughly consistent.

The extensive scope of the book makes a discussion of the different chapters and their sections difficult. In general the author has purposely and successfully refrained from being a partisan. His own philosophical convictions and contributions seem to be found chiefly in the chapters on Religion, in that on Natural Science and Philosophy and in the concluding chapter. In the first he defines religion as 'man's sense of the disposition of the universe to himself.' Parts of his chapter on Natural Science will be familiar to those who have read his pertinent criticism of Mr. Ward's 'Naturalism and Agnosticism' in the first volume of this JOURNAL. The concluding chapter points out the present tendency of the older systems to make concessions and thus to approach and converge. In the final section the author suggests a possible basis for new construction. He points out the collective character of the universe and the moral implications of such a pluralistic philosophy. Reality 'must be regarded as a collection of all elements, relations, principles, systems, that compose it. All truths will be true of it, and it will be the subject of all truths. Reality is at least physical, psychical, moral and rational. That which is physical is not necessarily moral or psychical, but may be either or both of these. . . . There is, then, an indeterminism in the universe, a mere coincidence of principles, in that it contains physical, psychical, moral, logical orders, without being in all respects either a physical, a psychical, a moral or a logical necessity. Reality or experience itself is neutral in the sense of being exclusively predetermined by no one of the several systems it contains. But the different systems of experience retain their specific and proper natures, without the compromise which is involved in all attempts to extend some one until it shall embrace them all.'

All of which sounds to the reviewer like an assertion of the right of the special problems to be solved each on its own merit against the tendency to let some one problem dominate over the other problems.

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Betting and Gambling: A National Evil. Edited by B. S. ROWNTREE. New York, The Macmillan Co. 12mo. xii + 250 pp. \$1.60 net.

This is a collection of papers edited by B. Seebohm Rowntree. It is reviewed in this JOURNAL, not so much for what it contains, as for what it does not attempt to do. What is needed is a more thorough, profound and systematic study of this evil, destructive alike to society and to the individual, than here is undertaken. In order to do this a long and difficult investigation of the biology, psychology, sociology, economics

and ethics of the practice must be undertaken, before any adequate or really possible remedy can be found. Because of the lack of just this solid foundation some of the papers of this book fail of adequacy; as, for example, that on 'The Repression of Gambling,' by the editor. Others, however, significantly imply this vast complexity of the problem, notably, that by J. Ramsay McDonald, on 'Gambling and Citizenship.' The paper by John A. Hobson, on 'The Ethics of Gambling,' valuable as it is, begins with a definition of gambling that is unsatisfactory. It is not 'The determination of the ownership of property by appeal to chance.' Much ownership of property is so determined that is wholly legitimate. There should be added to this definition the words, 'in which the gain of one is meant to be the loss of the other.'

On the whole the book is a valuable one and should be widely circulated. Such papers as that on 'Stock Exchange Gambling,' by A. J. Wilson, editor of *The Investor's Review*, and 'The Deluded Sportsman,' by a bookmaker, as well as others mentioned above, and the appendices on betting statics, bibliography, etc., are very illuminating. A cheap popular edition not only should find a ready sale, but the circulation of it should be pushed by all those agencies which have the welfare of society and the saving of individual men at heart.

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L'accident et le rationnel en histoire d'après Cournot. G. TARDE. *Revue de Métaphysique et de Morale*, May, 1905. Pp. 319-347.

Les rapports de l'histoire et de la science sociale d'après Cournot. C. BOUGLÉ. *Revue de Métaphysique et de Morale*, May, 1905. Pp. 349-376.

In the posthumous publication of selected passages from M. Tarde's lectures on Cournot great value is attached to the latter's delineation of the several tendencies that have prevailed in the intellectual and religious life of Europe, and even more to his success in discovering terms in which the interrelations of economic functions may be expressed quantitatively. Most space, however, is given to the following criticisms.

Chance plays in history a rôle far more important than that assigned to it by Cournot. For example, he errs in speaking of the intellectual development of modern Europe as an ordered and steady progress, in which the Reformation and the Revolution complete the work of the Renaissance. As a matter of fact, Luther led a flood of fanaticism that not only checked the march of reason, but, even as it now recedes, leaves a residue of obstruction in the Catholic policy of suppression it provoked. In general, Tarde finds no proof that events of to-day are directed towards, or are influenced by, the great events that are to come.

He contends, too, that Cournot's antithesis of chance to *reason*, in human history, rests on a confusion of the subjective, individual life with the objective phenomena of social life. It is as in a game of chess: in the mind of each player occur conflicts of ideas calling for a rational solution. Here chance is the antithesis to reason, though subordinate to it so far as chance associations subserve the rational solution. But, to the

observers, the game, as an objective, inter-individual fact, is controlled not by reason, but by the laws of the game. And so it is in the history of society, where chance is antithetic, not antagonistic to law.

M. Bouglé finds in Cournot a contribution to the dispute that, since his day, has waged to the point of tediousness, in which '*historiens-historisaunts*' have had to show that they can be scientists without being a subspecies of sociologist. Cournot thus describes the field of historical science, at least in part.

It deals rather with 'cosmological' or empirical laws than with theoretical or rational laws. That all mammals have seven cervical vertebræ is of the former class; that revolving fluid bodies tend to flatten at the poles, of the latter. The historian notes, too, the characteristics that prevail together at any time, and, also, wherever events repeat themselves in part, though his observations here attain to no universality; he notes the general direction and tendency of events, distinguishing therein, too, what is more important.

A task particularly pertaining to the historian because of the nature of his material, where chance and individuality play so great a rôle, is to distinguish the underlying *reasons* for an event from the 'efficient agents' or causes; and to note both those cases where those underlying reasons are so predominant that in the course of time the proper and efficient agent for their execution must appear, and also those cases, for such there are, where, in the balance of those impersonal forces, the great individual is revealed as a real, determining power, an incalculable element, whether in his presence or in his absence.

In history society is an active principle, working out its own laws distinct from those of the constituent individuals. Each society tends more and more to conform to laws common to all societies.

M. Bouglé objects that we can only speak of a society as a cause, when we know the law common to all societies under which it works. In general he objects to 'abysmal' separations of one science from another. There is but one type of law and science fundamentally.

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Traité de l'infini créé (Translation). NORMAN SMITH. *Philosophical Review*, Vol. XIV., No. 4, July, 1905, pp. 456-471.

This treatise, once ascribed to Malebranche, but now thought to have been written by Abbé Jean Terrasson, and proposing to clarify and develop the Cartesian notion of the 'indefinite,' has for its thesis 'that everything in nature—matter, spirit, number, duration—is actually and positively infinite.' The perfection, power and wisdom of God guarantee the actuality of an infinite, since any but an infinite result, as well as mode of action, are unthinkable on this presupposition. Furthermore, God has given us the idea of an infinite, and He would not give us ideas of non-existent things.

The argument in the sections on *Matter* and *Created Spirits* is alto-

gether Cartesian. Matter is nothing but extension, and extension is intrinsically an infinite conception since it can have no limits. Infinities differ one from another; the infinity of matter is different from that of spirit. God's infinitude is altogether different from that of created beings. 'God is infinitely infinite.' Created spirit knows both matter and God—both infinities. If the known is infinite, then the knower must have some sort of infinity in order to have any notion of them. Furthermore, the goodness of God makes it impossible that God should discriminate and give infinity to matter and not to mind.

Concerning Number.—Descartes's 'indefinite' number of planets is increased to an infinite number. There is an infinite number of creatures in the universe, and these are men, for 'it would be needless for matter to be infinite unless it were made use of by intelligent creatures. . . . Now as the inhabitants of this earth can only profit by a very small part of the universe, there must be other intelligent creatures who profit by the rest.' The objection that this is untenable on account of the difficulty of redemption for the inhabitants of these planets, is met by the assertion of a possible plural hypostatical union of God and men. Again, suppose the inhabitants of some of the planets had not sinned, on the postulate of the goodness of God, it is more probable that God would have sent His greatest blessing to mankind, viz., a Savior, to those sinless planets than to the sinners, and yet he has given the boon to the latter also.

Let us digress for the moment; if we carry this argument further, it will lead toward pessimism for the planets where there is sin. In addition, how, on the basis of the goodness of God—the central principle of the whole argument—can he account for the existence of sin on one planet and not on all? How does this square with his earlier argument that mind is infinite because God would not discriminate in favor of matter?

To return to the treatise. *Concerning Duration.*—Matter as a whole must endure. Change is merely a change of form, for planets are disintegrated and others formed, but the general type persists. The destruction of a planet involves the resurrection of all the men inhabiting it. These become angels.

His cosmogony is: 'God at every moment creates an infinity of spirits. . . . If God commences at this moment to create an infinity of spirits, He must give all of them bodies. For this purpose alone, then, he must create an infinite matter. . . . The universe being thus arranged, God creates, the moment following, another infinity of spirits.' This process continually involves a corresponding and infinite increase in the creation of matter. Therefore, 'we can conceive, not only of an actual infinite, but also that God can infinitely increase the infinite.'

The first principle of the whole treatise 'is that God . . . always does that which He can do, and He can only act in doing all that He can do. There is nothing, our system maintains, merely possible, and all that can be, is, or one day will be.' In conclusion, we may say that the whole argument rests upon this principle. If we accept this as necessary, and

also decide that such terms as the 'infinitely infinite,' and the statement, 'the infinite increases infinitely' are not mere logomachies, but logically and ontologically possible, then the author's conclusion must have great weight for our own thought.

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Note sur la classification des connaissances humaines dans Comte et dans Cournot. R. AUDIERNE. *Revue de Métaphysique et de Morale*, May, 1905. Pp. 509-519.

Both Comte and Cournot were influenced by that interest in social science which was the fruit of the Revolution and of the revival of history. Comte was impelled by a love of unification and by optimistic faith in the power of mind to reduce all laws to one general character and perfection. '*L'esprit antinomique*' of Cournot, on the contrary, recognized in the material furnished by history elements that are in themselves not amenable to expression in a general form, and in the laws that may be found he saw irreducible specific characters that give to the several sciences methods of their own, rather than, as in Comte's system, several degrees of perfection in attaining the one true method, the mathematical.

Cournot, therefore, rejected Comte's scale or ladder of the sciences. The social sciences no doubt depend on the progress of the biological, but only in part; for the former have in the science of order, combinations and probabilities an instrument of their own through which their advance has lately been more rapid than that of the latter. Moreover, he notes that, as regards simplicity and susceptibility to mathematical treatment, the social sciences at one end of the scale approach more nearly to the astronomical at the other than do the sciences that intervene, and that this mathematical, calculable character applies most of all to the highest and most complicated types of society, and will increase with the perfection and complexity of social life.

With these general differences in mind we may note that to Comte's three divisions, the practical sciences, the abstract-theoretical and the concrete-theoretical, correspond Cournot's divisions, the technical sciences, the 'speculative théorique' or natural, and the 'speculative-cosmological' or historical. Comte and Cournot both class empirical psychology as a biological science, both recognize the legitimacy of certain sociological studies still termed psychological, and both condemn as unscientific the 'subjective,' introspective method, and on similar grounds.

Neither Comte nor Cournot classes philosophy as a science. Comte, however, dominated by his belief in the homogeneity of knowledge, looked on philosophy as simply the unity of the sciences, requiring no distinct treatment. Cournot holds a different and a very interesting view on this point. Philosophy is not science, because it is neither essentially progressive nor rigorously impersonal. It is the product of a special capacity that unites with the scientific in the natural development of intellectual activity. Its results are not to be verified by sensible experience, but are to be affirmed by the 'philosophic sense.' It is as essential to the perfection of human nature as is science or art.

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JOURNALS AND NEW BOOKS

REVUE DE PHILOSOPHIE. May, 1905. *Dieu dans la philosophie de M. Bergson* (pp. 495-518): X. MOISANT. - M. Bergson's empirical method of approaching the problem, from the point of view of our continuous synthetic time-experience, is not essentially different from the scholastic logical method. The empirical method contains more psychological data, but uses the same analogies and deductions as the scholastic. *La théorie physique: le choix des hypothèses* (pp. 519-559): P. DUHEM. - Logic imposes upon the physicist only three conditions in his choice of hypotheses: self-consistency, mutual consistency and agreement with experimental laws. Each hypothesis is the result of progressive evolution; it is a slow growth, not a sudden creation. This is illustrated in the history of the hypothesis of universal gravitation. *L'imagination: les images motrices* (pp. 560-578): E. PEILLAUDE. - Motor images are not so obvious to unpracticed minds as visual or tactual; their existence needs demonstration. The motor image is an essential constituent of sensation and all the active side of the inner life. *Analyses et Comptes Rendus*: A. Mollière, *Une famille médicale lyonnaise au XVII^e siècle*: T. DE VISAN. P. Bourget et Michel Salomon, *Bonald*: T. DE VISAN. J. Baruyi, *Leibniz: trois dialogues mystiques inédits*: X. MOISANT. Sully-Prudhomme, *La vraie religion selon Pascal*: P. CHAINE. Irving King, *The Differentiation of the Religious Consciousness*: C. A. DUBRAY. G. Bellerini, *Il principio di causalità e l'esistenza di Dio*: G. DE PASCAL. G. Weill, *Histoire du mouvement social en France*: G. DE P. A. Fouillée, *La propriété sociale et la démocratie*: G. DE P. Ch. Antoine, *Cours d'économie sociale*. Périodiques français. Sommaire des revues. L'enseignement philosophique. Chronique.

NOTES AND NEWS

WILLISTON S. HOUGH, Ph.D., professor of philosophy at the University of Minnesota, 1900-04, has been appointed professor of philosophy in the George Washington University at Washington.

It is announced that Professor Josiah Royce, of Harvard University, will give a course of lectures at the Johns Hopkins University in January, 1906, on 'Aspects of Post-Kantian Idealism.'

DR. ALBERT LEFEVRE, of the department of philosophy of Tulane University, has been elected to the chair of philosophy in the University of Virginia.

DR. BRUCE R. PAYNE, of the department of philosophy and education of the College of William and Mary, has been elected to the chair of secondary education in the University of Virginia.

PROFESSOR E. B. TITCHENER'S 'Experimental Psychology, Quantitative' is in press and is expected to appear in September.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE CATEGORY OF THE UNKNOWABLE

THE doctrine of the unknowable is associated in our minds with the name and philosophy of Herbert Spencer. It appears, however, that this doctrine is a relatively external attachment to the synthetic philosophy, designed to relieve the system from the reproach of hostility to religion. Later utterances of Herbert Spencer indicate that it came to meet a strongly felt emotional need. Hence it seems to deserve, on psychological grounds, a consideration to which it could not otherwise lay claim. In estimating the logical significance of the doctrine, we should bear in mind that in Herbert Spencer it is an adaptation of a view which Sir William Hamilton and Dean Mansel had previously developed with superior dialectic skill. It was a weapon in Hamilton's hands against the idealistic systems of Schelling and Hegel, used avowedly in the spirit of Kant's critical philosophy. Hamilton developed the doctrine of the unknowable in intimate connection with a distinction between knowledge and belief which is based upon a formulation of Aristotle; and in one form or another, the category in question has engaged the attention of almost every thinker of historical importance.

It is evident at once that the unknown and the unknowable are two concepts that stand in the closest relation. It is equally evident that they are not identical. All that is unknowable is unknown, but not all that is unknown is unknowable. The unknown is the parent concept and a study of its significance will lead us naturally to the investigation of the other. The unknown meets us in the sphere of theory and also in the sphere of practice. That knowledge is progressive, that its boundaries are constantly being enlarged, that it is unceasingly engaged in reclaiming new territory from the realms of the unknown is a characteristic boast of modern times. The matter has another side, which is not so often brought forward. It is undoubtedly pardonable to take pride in a constantly growing bank account, but it seems a nobler source of intellectual inspiration to remember that the search for truth is infinite. Can we think

a time when the search for truth must cease for lack of something yet unknown? Knowledge demands a knower, and the existence of the knower in time means that reality is still in the process of becoming, and that there is still truth to seek and truth to find. The unknown is thus the indispensable *alter*, without which the quest for knowledge must cease.

What is the immediate significance of this fact? Herbert Spencer holds that it reveals (or shall I say conceals?) the true sphere of religion. The unknown, of which we can not rid ourselves, no matter how fast our knowledge may grow, is, according to Spencer, the object of religious faith and worship. Such a position seems to be arbitrarily assumed. It does not follow naturally from the considerations adduced. I think that the fact of the unknown has its immediate bearing upon the nature of science itself. Truth is a system of conceptual judgments. In a system, every part is so related to every other part, that its character can not be fully determined without taking all these relations into account. The truth is the whole, says Bosanquet. No part can rest securely in its own individual character, until the character of the whole has been fixed. A new discovery may have retroactive effect. It may compel the reorganization of long-established theory, for the supreme court of reason does not recognize a statute of limitations. It follows consequently that our unfinished body of knowledge is hypothetical truth, or an approximation to the truth. But we must point out a distinction. The truth that two and two make four is a piece of knowledge not dependent for its validity upon an experience yet to be gained. On the other hand, a complete knowledge of the concrete nature of reality is dependent upon experiences yet to be gained. An abstract logical or mathematical system may be formed, having no further relation to experience than that which was involved in its origination. Within such a system, progress consists in discovering more and more fully the consequences of the initial presuppositions. Such consequences are by implication present in the beginning, and have no power to alter other implications deduced except to give them a richer meaning. But the fact that the concrete nature of reality is and must remain partially unknown, makes all that body of scientific truth which bears upon concrete reality provisional and hypothetical. An hypothesis may suffice to explain 99 of 100 cases and yet prove its inadequacy by inability to explain the hundredth and last case. As long as reality is in process of becoming, this last case may always be expected. And reality is always in process of becoming for an individual who is conscious of living a real, significant life under conditions of time. Our science is provisional, not because it is frag-

mentary, but, because, being ideally systematic, it is actually fragmentary.

Herbert Spencer distinguishes between analytic philosophy and synthetic philosophy. Analytic philosophy is a system of categories; synthetic philosophy is a system of reality. The recognition of the unknown as having decisive significance for science makes a synthetic philosophy, in the sense in which Herbert Spencer uses that term, radically impossible. Spencer has developed and applied the categories which describe in terms of space and time the changes that things undergo. But that from now until the end of time, nothing could be said or learned about the universe in any of its aspects, that should be anything but an application in detail of Herbert Spencer's philosophy, is a supposition that can hardly be seriously entertained when once its meaning is fully grasped.

A further consequence of the fact of the unknown, and one which has recently attracted much attention, may here receive a casual reference. The only test of truth which can actually be applied to the knowledge of which we are in possession is its workableness. The correspondence of the idea with its object can not be finally determined while both the idea and the object are yet unfinished. Nor is it a test which can be even partially applied, when the idea is a system. But our fragmentary knowledge evidently approximates to the ideal of perfect systematic truth in proportion as it proves adequately useful in guiding us to successful anticipations of experience. The fact that an ultimately false conception may for a time be practically successful, need not disintegrate for us the absolute logical distinction between the true and the false.

In the sphere of theory, then, the fact of the unknown, considered as an essential concomitant of our knowledge, makes a system of reality impossible, renders all concrete sciences hypothetical and makes the actually applicable test of truth pragmatic. In the sphere of practice the unknown also has significance. It is true that theoretic ignorance does not always operate to destroy practical certainty. A man suffering from a disease of whose exact nature he is ignorant, may nevertheless be practically certain that it will be immediately fatal. On the other hand, theoretic knowledge may be joined to practical uncertainty. The scientific principles involved in a future event constitute a formula in accordance with which the actual result may be predicted, but which does not by itself determine what that result will be. A mill does not produce flour except it be supplied with grist for the grinding; neither can scientific laws determine actuality, except factors given and individualized in time and space be introduced in place of the generalized terms of the formula.

Scientific or theoretic knowledge is not knowledge of the actual, and does not reach the individually real.

Practice, on the other hand, deals always with the particular, as Aristotle points out, and involves knowledge that this individual something exists. From the point of view of practice, scientific knowledge is a means to the attainment of this end, although the realization of the end carries us beyond the sphere of scientific knowledge. The unknown meets us here chiefly as the future. It is evident that our ignorance of the future is what gives significance to will. An adequate treatment of this theme would, therefore, involve a philosophy of life and conduct, of ethics and religion. I wish merely to cite two quotations for the sake of their suggestiveness, and to indicate how the practical significance of the unknown has been generally acknowledged. The first is from Euripides:

Fame is insecure,
Nor can the prosperous their enjoyments guard
Against a change of Fortune, for the gods
Backward and forward turn her wavering wheel
And introduce confusion in the world,
That we, because we know not what will happen,
May worship them.

The second is from the 51st Psalm:

Because they have no changes, therefore they fear not God.

These quotations are evidently intimately related to the well-known saying, 'Fear made the gods.'

Spencer's doctrine of the unknowable, in so far as it seeks to furnish a basis for religion, bears a superficial resemblance to this natural and well-nigh universal attitude. But the resemblance is only superficial. It is the uncertainty of the individual something, the object of hope or fear, corresponding to a personal, subjective attitude, which the popular consciousness recognizes as having religious significance. For Herbert Spencer it is the undiscovered law, the unknown beyond of scientific knowledge, corresponding to the impersonal, objective reason, which, by a strange perversion, becomes the object of worship. He disposes of the deepest aspirations of the human spirit by relegating them to this region, which naturally becomes a safe retreat for all sorts of emotional crudities, since where nothing is known, there can be no basis for criticism. Any emotional extravagance we please to indulge in is here as good as any other, especially in view of the fact that religion is specifically divorced from morality.

The unknowable as an object of religious worship is also defined in a different way. According to Spencer, certain ideas are unknowable, because they can not be realized in conception. Such ideas are the Infinite, the Absolute, the First Cause and the like; also Space,

Time, Matter, Motion and Force, considered as things in themselves. By conception, Spencer evidently means intuition, either presentative or representative. Every idea whose meaning is not thus intuitively realized, is symbolic, and if the idea is incapable of such realization, it must be dismissed as a pseudo-idea, having no intelligible object corresponding to it. Spencer's presentation is intended to leave the impression that all our solid thinking is done by means of intuitively realized ideas, and that symbolic thinking is a source of intellectual danger. As a matter of fact, every conscious content whatsoever, if it has any cognitive or logical function at all, is symbolic. The frank acceptance of this fact is, it seems to me, the only means of distinguishing between knowledge and its objects, and faith in the validity of this objective reference of thought the only means of escape from a subjective solipsism which would annihilate knowledge and truth together. Spencer seeks to show that certain ideas are unthinkable. There is a little dialectic puzzle involved in every such attempt, which should warn us of the necessity of making a distinction which Spencer overlooks. I may confess that I do not understand the meaning of a term; I may also show that true ideas involve a contradiction when predicated of the same object. But it is impossible to *prove* that an idea is inconceivable except on the basis of the nature of that idea. In the demonstration, the idea must be conceived. Thus the very success of the proof that an idea is inconceivable depends on the conceivability of the same idea. This objection seems to have force as against Spencer's presentation of the doctrine of the unknowable. But Hamilton and Mansel have developed it in a manner which frees it from such logical confusion. "Hamilton maintains," says Mansel,¹ "that the terms absolute and infinite are perfectly intelligible as abstractions, as much so as 'relative' or 'finite,' for 'correlatives suggest each other,' and 'the knowledge of contradictories is one'; but he denies that a concrete thing or object can be positively conceived as absolute or infinite. . . . (These) abstractions . . . Hamilton does not assert to be unmeaning, and . . . he regards (them) as knowable in the only sense in which such abstractions can be known, viz., by understanding the meaning of the words." "Every something that has ever been intuitively present to my consciousness is something finite. When, therefore, I speak of a 'something infinite,' I mean a something existing in a different manner from all the somethings of which I have had experience in intuition. Thus it is apprehended, not positively, but negatively—not directly by what it is, but indirectly by what it is not. A negative idea is not negative because it is expressed by a negative term, but because it has never been realized in intuition."²

¹ 'Philosophy of the Unconditioned,' pp. 110, 111.

² 'Philosophy of the Unconditioned,' pp. 115, 116.

By conception Mansel means the bringing of various characters together in a positive intuition. It seems to have escaped him that no individual object whatever can be thus conceived or intuited. We may think an object or refer to it by means of a general or abstract idea, but no object, be it a pebble or a man, can as this particular object, individualized in space and time, be conceived, nor can any perception or series of perceptions, exhaust all its characters. We can not endow an idea with the power of individual reference by ever so great an addition to its logical content. Negative conceptions like the infinite are no farther removed from positively exhibiting an individual object than positive conceptions like man or pebble. Analysis will show that the grasping of any *actual* totality whatever involves the infinite. The same argument, therefore, which would make the infinite unknowable, also makes individual reality unknowable. It is impossible to banish the infinite from our thinking; we can not make of it an isolated realm, in order that we may, undisturbed by its difficulties, concern ourselves with the finite. The infinite and the finite are everywhere inseparably bound up together. However, the conclusion to be drawn from the above analysis, it appears to me, is not that reality is unknowable, but that the knowledge we have of reality is not identical with reality itself. It seems to me that Münsterberg is right in holding that the real object is given us directly only where the will is involved; the knowledge-processes do not by themselves reach reality. Every object possesses in itself an infinity of possible sensible experiences. Through an infinity of connection with other things it is the point of contact with reality as a whole, so that to know any single object completely would be to know 'what God and man is.'

Such considerations appear to have significance for the attempt to adjust the warring claims of faith and knowledge as factors in determining our attitude toward reality as a whole. Hamilton and Mansel urge that certain real objects are given to us in knowledge, while others can only be given to us in belief. If the foregoing analysis is correct, such a distinction falls to the ground. All objects may be apprehended in knowledge, and all objects may be apprehended in belief. But there is this difference: Knowledge is of what a thing is, belief relates to its actuality,—that it is; knowledge presents partially the potentialities of that with which belief establishes actual contact. The Aristotelian distinctions between actuality and potentiality, between the concrete union of form and matter on the one hand, and form without matter on the other, between primary reality and secondary reality, all run parallel to this distinction between belief and knowledge. The distinction seems to be fundamental. If knowledge, for instance, is allowed to be

substituted for faith in respect of our ultimate apprehension of reality, if the ideal as such is simply identified with the real, will and morality lose their absolute significance.

The concept of the unknowable is sometimes reached by reflecting upon the relation between knowledge and its object on the basis of a different presupposition. By assigning epistemological significance to the physiological processes involved in sensation, knowledge is made to appear as a transforming and not a revealing function. The object of knowledge then becomes *qualitatively* different from the knowledge we have of it, and consequently an unknowable thing-in-itself. But there seems to be no valid reason for regarding the physical stimulus of sensation as reality *par excellence*, or the ultimate object of all knowledge; nor, if there were, would it be unknowable, for it is just the task of physical science to determine its nature. And to conceive of knowledge as altering its object is to bind ourselves to a view of its nature which contradicts the testimony which it bears of itself, and to make it meaningless as knowledge.

Thought can not rest content unless it seek and discover its own limit. The various attempts to find some place for the unknowable within a philosophical system are one and all illustrations of the fascination which such a limit exerts upon the mind. Can it be transcended? Can anything exist which transcends all our concepts? Such questions involve an attempt to leap out of oneself. The reason fails to give the concept of the unknowable a positive content, but the imagination, nevertheless, plays with it and gives it an arbitrary content. This content may at pleasure be the highest object of admiration or the lowest and most contemptible of things. Spencer, having defined the object of religious worship as unknowable, goes on to say that our choice lies not between assigning to this personality or something lower, but personality or something higher. Whether there is or is not something higher than personality may here be left undiscussed. But in any case, it is certain that this dictum of Spencer's is purely arbitrary. There is no real choice in the matter at all, for we can not rationally choose in the absence of all known determining conditions. To define the object of worship as unknowable is to make rational religion impossible. Religion is an attempt to solve the mystery of life. Every religion naturally recognizes that mystery. But to suppose that this recognition is not the first, but the last, word of religion, and that philosophic religion consists in the affirmation of the inscrutableness of life—this is apparently to confuse the statement of a problem with its solution. Surely, only a vague, crude emotionalism, which does not understand itself, nor even wish to understand itself, can be permanently

satisfied with a religion of the unknowable. If the fundamental object of religious aspiration is to be defined as unknowable, then the unknowable must somehow become known, and the miracle of self-transcendence must be frankly avowed as a fact, acknowledged as a transition which reason can not bridge, or else life and thought become unsolved riddles.

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THE PSYCHOLOGY OF RELIGION

THE life of the individual is not separated by any sharp line from that of the race. There is no evidence of any chasm between our individual experience and the deeper life of the race or the processes of the world of nature. The individual life comes into being through a very gradual process. Will and all that stands for individual personality are the result of a long and gradual development. Indeed, our early life is more racial than individual. Movement of the organic, reflex or instinctive type is prior to, and the foundation of, will; that is to say, the individual mind is evolved through a gradual process. In the same way, instinct is more fundamental than habit; but instinct is racial and habit individual. Thought and will—individual in their significance—are complex and secondary developments of mental life. In reflex and instinctive, that is in racial, behavior the stimulus goes over immediately into some motor expression. But where individual reflection plays a part in conduct the nerve current (or physiological accompaniment of the mental process) passes through what Professor James calls a 'loop'; that is to say, it travels a path marked out not only by racial but by individual experience. Every one knows that what comes in between the stimulus and the response varies with animals, with individual men and with races. With the animal the individual life is almost entirely submerged in the ocean of racial experience; perhaps in the lower animals it is wholly submerged. The lives of many men are largely instinctive and reflex, and much of the life of all men is entirely within this sphere. In the early stages of life, therefore, mental individuality has not come fully into existence. These facts are universally recognized by psychologists. Mental development, says Lloyd Morgan, is 'the manifestation, under the conditions of time and space, of an underlying activity, one in existence with, and yet distinct in analysis from, that of the cosmos at large.'¹ And to the same effect are the words of Stanley Hall: "The real ego is a spark

¹ 'Comparative Psychology,' p. 10.

struck off from the central source of all being, freighted with meanings that, could we interpret them, would give us the salient facts of its development history."²

Our individual life is not 'created' all at once. It is the result of a process, and it is itself a process. Creation is a word extremely misleading. The term individuation is better to describe the process of the evolution of the individual life. The growth of the child reveals the fact that the stream of experience of the individual is only an eddy in the deeper life of the race and of nature. Nowhere is this better expressed than in the words of Stanley Hall: "Our souls are phyletic long before and far more than they are individual . . . ; a slight automatism, perhaps, being the sole relic of the most central experiences of many generations, . . . a feeling that only peeps out for a moment in infancy, the far-off dying echo of what was once the voice of a great multitude."³ This is the racial, universal, non-individuated aspect of human experience.

In the early stages of life there is no consciousness of self. This is the age of play, of imitation, of inimitable, unconscious spontaneity. It is the age in which the child learns and acts naturally, because unconsciously. There is no consciously centred individuality, but an unconscious expression of all the rich racial life with which this period is so heavily endowed. The nebulous racial life has not yet crystallized into a center of self-conscious personality. Physiologically, it is the period of the development and coordination of the centers of sense-experience. It is the age in which the organism seems but a storehouse of unconscious life.

Mr. Fiske has acquainted us with the importance of the prolongation of human infancy as throwing a flood of light on the problem of human development. Because animal infancy is of such short duration, the life of the individual is an epitome of the life of his race; whereas in our human world the prolongation of infancy is the condition of the individuation of a self-conscious personality. This prolongation of infancy is the distinguishing mark that characterizes the human family. The individual helplessness of the infant is in striking contrast to the racially equipped young of the animal. This is the very sign of its humanity. It means on the physical side that the sensori-motor are is not fixed, but open. On the mental side it means that its intelligence is not limited by a nervous structure fixed almost at birth by heredity.

Out of the undifferentiated life of the race the individual is born. Nothing is more full of mystery than this process of individuation. And no other problem is so freighted with significance for the human race.

² 'Adolescence,' Vol. II., p. 69.

³ 'Adolescence,' Vol. II., pp. 64-65.

An adequate discussion of the individual self belongs most properly to psychology; we can here indicate only the outlines of the subject. Three aspects, each of which has been worked out by special investigators, may be noted. The sense of self may be viewed in its physiological, sociological and psychological aspects. On its physiological side the problem has been discussed by such authors as Maudsley,⁴ Mercier,⁵ Ribot⁶ and Stanley Hall.⁷ On its social side the self has been most thoroughly treated by Baldwin.⁸ Psychologically, the problem has been discussed by James,⁹ Stout¹⁰ and by several who have worked in the field of the psychology of religion.¹¹ The study of comparative psychology, because of its evolutionary bearing, is almost necessary to an understanding of the present state of the problem. The sense of self is a complex matter. Mercier's distinction between the outgoing nerve currents, accompanied by a consciousness of the external world, and the nerve currents running to the viscera, giving rise to the sense of self; Baldwin's treatment of imitation in building up the sense of self through a social medium; Hall's contribution on the sense of self at adolescence, and, finally, the sense of self which is due to mature reflection and which lies at the basis of morality and religion—all this, and much more, must be kept in mind in dealing with so complex a subject. Even the study of history with its individualistic periods must be taken into account.

Here in the evolution of the individual soul is the real origin of man. The creation of man is not so much a fact as a process. A fact of past history it was; but only because it was first of all an accomplished psychical process. The rise and fall and salvation of man is a process forever going on within us in the everlasting now. This is the method of conceiving the origin of man among the profoundest of the Hindus. It is the method of every truly great soul,¹² and the study of the psychology of religion will show that this view is true to the nature of the human soul. The origin of volition, of conscience, of reflection—this is the origin of man.¹³ Speaking of this process, Sir Oliver Lodge says:¹⁴ "Man was beginning to cease

⁴ 'Body and Mind.'

⁵ 'Sanity and Insanity.'

⁶ 'The Diseases of Personality.'

⁷ 'Adolescence.'

⁸ 'Mental Development.'

⁹ 'Psychology.'

¹⁰ 'Psychology.'

¹¹ Coe, Starbuck, Leuba, Hall, James, etc.

¹² Vide Browning's 'Cleon,' and Emerson's 'Essay on Character.'

¹³ Vide Mezes's 'Ethics,' Romanes's 'Mental Evolution' and Darwin's 'Descent of Man.'

¹⁴ *Hibbert Journal*, III., No. 2, p. 330.

to be merely a passenger on the planet, controlled by outside forces; it is as if the reins were then for the first time being placed in his hands." "A fall it might seem, just as a vicious man sometimes seems degraded below the beasts, but in promise and potency a rise it really was." "The child from nine to twelve," says Stanley Hall,¹⁵ "is well adjusted to his environment and proportionately developed. . . . At dawning adolescence this old unity and harmony with nature is broken up; the child is driven from his paradise and must enter upon a long viaticum of ascent, must conquer a higher kingdom of man for himself, break out a new sphere and evolve a more modern story to his psychophysical nature. . . . One may be in all respects better or worse, but can never be the same. The old level is left forever. Perhaps the myth of Adam and Eve describes this epoch."

With the evolution of the sense of self, unconscious grace passes into a self-conscious awkwardness. Instead of imitating others the youth now prefers to balance himself over against them. He no longer accepts things; he criticizes them. This is the period of heroism and individualism. Institutions and doctrines are matters which now take on a personal interest. The first period we characterized as one of racial inheritance and social imitation. This period is the time of conscious acquirement and individual control. It is marked by a contrast in consciousness between the sensory life and the dawning of the consciousness of self. The nebulous life of the child now becomes the self-centered life of the youth. Life is now ego-centric, self-assertive. As contrasted with the passive objectivity of the first period life is now painfully subjective. The individual is attaining his own point of view. Hitherto life has gone on unconsciously, now every new situation presents a struggle. Action is no longer instinctive, natural; it is inhibited by a painful self-consciousness. Such a self-consciousness means chronic inhibition. Life is no longer one with the mountains, the streams, the plants, the animals. The consciousness of self has introduced a breach between man and nature, between man and man. This we may call the negative form of the sense of self. Life can not go on under such conditions. The individual feels estranged from the unity of things, that unity upon which his very life depends.

It is, however, evident enough that this individualistic phase of life is not the whole of life; it is only a stage of development. Individual volition may guide the instincts and reflexes, but it is not independent of them. Individual reflection may control the current of experience, but it is itself a section of the stream of experience.

¹⁵ 'Adolescence,' Vol. II., pp. 71, 72.

The body is not a machine with which the individual experience is externally associated. In the words of Lloyd Morgan, "Consciousness . . . does not come into the possession of a dead organism and then begin to pull the strings and make it work and live."¹⁶ The individual is a part of the larger life of the race and of nature. This means that the function of the will—the individual aspect of experience—is to guide and control the side of instinct—the racial aspect. The development of volition, reflection, individual initiative marks the rise of the distinctively human. But unless these individualistic elements function in the service of the deeper elements of experience, upon which they depend, the rise of the individual means but his 'fall.' The individualistic aspect of the self, necessary as it is, is but an aspect, after all. The self is more than an individual. It is a member of society and grounded in the deeper unity of nature. The development of volition and all that makes for individuality, therefore, must be in accordance with this deeper unity of society and of nature. The full development of the self must, accordingly, reveal the individual's thought and will functioning in the service of its own deeper life, a life which is merged in the deeper being of the race and of nature.

But the unity which is to exist between this individuated self and its world can not, of course, be the simple immediate unity of instinct and unconscious activity, for the organic life has now come under the control of the cerebral, the reflective life. The immediate unity, the mechanical unity of instinct must be supplemented with a unity of self-conscious will. The conflict between the old, organic life and the newly attained sense of self must result in some readjustment. There must be a reconstruction of the individual consciousness to meet the demands of its growing life, personal, social and religious. We have called the first stage of human development racial, and the second, individual; we can now describe this last stage as that of readjustment between the racial and individualistic tendencies. This readjustment between the individual self and the deeper life of the world is what in theology is known by the term 'conversion.' "Conversion is a natural, moral, universal and necessary process at the stage when life pivots over from an autocentric to an heterocentric basis."¹⁷ It is the voluntary and cooperative return of the soul to the deeper ground and source of its own being. Statistics show that conversion normally occurs at adolescence; "infancy is generic and abounds in rudimentary physical and psychic traits common to many forms of higher animals as well as of

¹⁶ 'Comparative Psychology,' p. 152.

¹⁷ Hall, 'Adolescence,' Vol. II., p. 301.

human life. In the adolescent infancy of the soul a similar totalizing tendency appears on a higher plane.''¹⁸

According to this view of things religion does not wait upon some intellectual conviction as to the ultimate rationality of the universe. It has its roots further down in the soul than the level of intellection. It is founded upon an impulse which so far from waiting for intellectual proof is itself the source of religious feeling, using the intellect as its instrument, not in creating, but in shaping the material of experience. It is the function of the intellect not to create reality outright, but to deal with whatever reality may be experienced. The intellect is an instrument in the service of experience. Through selection and omission it relates 'this' with 'that,' but the 'this' or 'that' with which it deals is always something experienced.

The attitude toward life as a whole, not simply toward a social life or the life of nature or one's own purely individual self, but toward the source of life regarded as God, is what every one must mean by religion. And the process itself by which this attitude is clarified is what is meant by conversion.

The traditional view of conversion has tended to regard all individuals as belonging to one type. The emotional, passive, momentary experience of an instantaneous change in one's life has been taken quite generally as the standard type of reconciliation between the individual will and God. Certainly there is much truth in this view. The talents of the genius are never the product of his merely individual will. His conscious efforts rather express than create what is already dormant within. The artist, the musician, the orator is great only when he is possessed by his work, of which he is its means and realization. This is why the genius is unconventional; his overwhelming energy breaks through the shams, forms and customs which inhibit and restrain the ordinary man. Cold abstract ideas never move men to great deeds until they are forged in the heat of some voluminous emotion, some overwhelming, instinctive feeling. No great work is ever done without the sustained attention which is founded upon some fundamental instinct. In all these cases the storehouse of energy, the reservoir of activity, is deep down in the subconscious life. And it is the welling up of this subconscious life which in the field of religion results in the phenomenon of instantaneous conversion. According to Professor Coe's statistics automatisms were present in 54 per cent. of the persons who experienced striking religious conversion; while of those who sought such an experience in vain only eight per cent. presented cases of automatism. Accordingly, 'the conclusion is that the mechanism

¹⁸ *Ibid.*, p. 302.

of striking religious transformations is the same as the mechanism of our automatic mental processes.' But this suggestive, passive, emotional type of life is not the standard for different temperaments. Indeed, it has its limitations even within its own sphere; only a few in this class are geniuses, and many belong here rather from a lack of individual intelligence and conscious control than from any overwhelming richness of instinctive endowment. Many conversions of this type are occasioned by organic changes in the individual and pass away with the same.

The organizing center for the religious as well as for the social life is to be found beyond the boundary line of the merely individual consciousness. But it is a question of temperament whether the sub-conscious or the conscious side shall predominate. And as for geniuses, it requires individual intelligence and conscious control as a medium through which deeper things may come. The Church has emphasized the divine to the exclusion of the human; science has admitted no form of intelligent life beyond the individual streams of consciousness. If psychology can heal this breach it will become the corner-stone of human thought.

Now in terms of psychology conversion is a change in the center around which the facts of consciousness are organized. Our momentary consciousness is a focus, to use the phrase of Lloyd Morgan, about which there is always a margin of unconscious or subconscious life. And this realm of the unconscious is the sphere of the fundamental instincts and emotions of life. But, what is to the point in our present discussion, a fact in this unconscious realm may be forced up to the surface and become the organizing center of conscious life.

If there be a divine life over and above the separate streams of individual lives, the welling up of this larger life in the individual's experience is precisely the point of contact between the individual person and God. And when some great religious emotion or conception which has grown unconsciously breaks forth on the individual with sufficient power to reduce all other things to subordination, and to become itself the organizing center for that individual, we have the phenomenon of conversion itself stated in the language of psychology. The individual no longer feels himself and others to be disconnected jets of flickering consciousness, with no like reality in the nature of things to bring forth this life; he has the conviction that he and all other persons are living in and through a larger life akin to their own. Where this consciousness of a divine life comes to exist as a structural element in any individual's mind it performs the function of an organizing center for an entirely new experience—new, not in the sense that the old self no longer exists, but in the sense that a new

center of personal experience, the consciousness of unity with a divine life, makes the individual person a participant therein, and subordinates all the channels of life to this ideal center. Such a self has passed out of its negative, tentative stage and has attained a position of oneness with the deeper unity of the world.

The lowest form of consciousness save that of mere sentiency is a consciousness of external objects or things. In the religious sphere it corresponds to the observance of ceremonies or the obeying of commands. Self-consciousness is something that goes deeper than this knowledge of mere externals. It arises only when consciousness ceases to look upon objects as a mere spectator and begins to ask the meaning of objects, until, thrown back upon itself, it regards itself as more important than they. This awareness and appreciation of self is the basis and beginning of religion. It is the foundation of all the deeper religions. But were one's religious experience to mean nothing more than this bare consciousness of one's individual reality, one's religion would be in its childhood. This consciousness of self brings in a chasm between the individual and the larger unity of the world of which he is an organic part. And religion is the expression of the individual in his efforts at reconstruction. The passage from this new sense of personality—usually between the years of 15 and 25—to a sense of unity with the deeper meaning of life is religious conversion.¹⁹ The sense of personal alienation, and over-emphasized self-consciousness, is only the negative assertion of a dawning sense of self. The consciousness of self is the beginning of religion and of morality—in short, of the individual himself—but its early negative, exclusive form must be transformed into a positive inclusive type of life before the individual can be said to be really himself in a religious sense. The circle of this inclusiveness, the extent and depth of this unity with other selves and with the world, measures the worth and reality of the individual himself. It is easy to have a consciousness of things to be done accompanied by some sense of duty; easy, too, is it to have such a self-consciousness as is revealed in personal conflict, or even in individual self-assertion of the negative type. But how many, how many, indeed, have attained such a type of individuality as that every act, every feeling, is regarded not only as expressing or annulling one's own self, but also as joining one with, or separating one from, the best that is in others; yes, that unites one with, or separates one from, the being of God Himself? Yet this is the ideal of the religious individual.

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¹⁹ See Starbuck, 'The Psychology of Conversion'; Coe, 'The Spiritual Life'; Hall, 'Adolescence.'

DISCUSSION

AN OPEN LETTER TO PROFESSOR DEWEY CONCERNING IMMEDIATE EMPIRICISM

ON first reading your article entitled 'Immediate Empiricism' it seemed to bear out the promise of its title and to give us a statement of an empiricism at once radical and thoroughgoing. But on carefully rereading it the impression forces itself upon me that you have made the empiricism so thorough that it has overleaped itself. My difficulty is so obvious a one that I dare say you have a ready answer. Probably I have missed part of your meaning. But as I think that others of your readers may share that difficulty, I venture to lay it before you in the hope of eliciting an explicit reply.

The name *immediate empiricism*, or *immediatism*, is intended, if I have caught your meaning, to emphasize two characteristics of the 'new philosophy' now generally called pragmatism: (1) 'Things are what they are experienced as,'—which gives us the one 'postulate' of immediate empiricism; and (2) Every experience is 'that experience which it is and no other,' or, in other words, every experience is a '*determinate* experience,'—which gives us the 'criterion' of immediate empiricism. 'This determinateness,' you write, "is the only, and is the adequate, principle of control or 'objectivity'" (p. 398). And, elsewhere, "If one wishes to describe anything truly, his task is to tell what it is experienced as being."

Now as you further explain the first of the above propositions you make it mean, sometimes, no more than this: every experience, as experience, is what it is experienced as. Or, again, you interpret it as meaning simply, that if one starts out to explain any fact of experience, he must stick 'in the most uncompromising fashion' to that definite initial experience from which he sets out, as a real experience. With either interpretation the first proposition becomes as simple, elementary, 'tautologous' even, as the second; and both would be accepted at a glance, as a matter of course, precisely as one would assent without argument to the propositions, *A* is *A*, and *A* is not non-*A*.

The obviousness of these propositions gives your general position its plausibility. But to get out of them any 'criterion,' or "principle of 'objectivity,'" do you not then, and without giving any logical defense, substitute this highly questionable interpretation of your first proposition; everything experienced is, and is no more than, it is then and there experienced as? Is this what immediatism means? I gather that it is, not only from the general drift of your discussion, but in particular from such expressions as the following, which you

use as equivalent in describing a typical case of a 'corrected experience': 'the experience has changed,' 'the thing experienced has changed,' 'the concrete reality experienced has changed' (p. 395). And, in speaking of the Zöllner lines, you write, "the lines of *that* experience (the initial 'uncorrected' experience) *are* divergent: not merely *seem* so" (p. 397).

I am aware that by a certain placing of the emphasis, and by introducing qualifying and explanatory phrases, all of these expressions could be reduced to the tautological form. But they suggest the interpretation that the real thing aimed at in the original experience is gone and that we are dealing with another, and maybe even a different kind of a real thing. And some such interpretation seems to be required if immediatism is to furnish a 'key to the question of the objectivity of experience.' In the 'corrected experience' of the Zöllner lines, you imply, the lines that then are at once *seen* as converging and *known* as parallel are the lines of that particular experience, and not the real and self-same lines of the initial experience. But why should there be any problems at all if each experience is a new and a different reality? Why must experience be 'corrected,' and how can we speak of *it* as being corrected if it is in fact simply superseded? You write: "It is in the concrete thing *as experienced* that all the grounds and clues to its own intellectual or logical rectification are contained." Here the phrase 'its own' seems to bring back the reference to a permanent objective reality that is carried through the process of correcting,—a view which immediatism aims to supplant. And when you speak of the initial experience, say of the Zöllner lines, as containing, *as experienced*, 'all the grounds and clues' to its correction, how can you make this out except by reading into that initial experience as part of *its* reality that fuller meaning and larger context which only a later knowledge (experience) brings to light? This would, however, give us, as far as it goes, an idealism,—and of a decidedly transcendental kind.

My difficulty, in short, is simply this: Either everything experienced is real exactly as, and no further than, it is then and there experienced,—and then there is no occasion to speak of correcting or rectifying experience; or, there is in every experience a self-transcendency which points beyond that thing *as experienced* for *its own* reality,—and then good-by to immediatism. Either atomism¹

¹Not, to be sure, the atomism of the earlier English psychology, to which you refer in a footnote. But immediatism seems to give us a kind of atomism differing from that only in greater complexity of the atoms. The reals are chopped off from one another. If, on the other hand, this consequence is avoided by making the earlier experience contain implicitly the later to which it leads, immediatism gives way to a doctrine of mediation.

or transcendentalism. And either view seems, in your article, to pass over very easily into its opposite, in good old Hegelian fashion.

Is there another alternative which I have overlooked?

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REVIEWS AND ABSTRACTS OF LITERATURE

The Logic of Human Character. CHARLES J. WHITBY. London, Macmillan & Co. 1905. Pp. vi + 225.

In attempting to state the general aim of this book we meet at once with its most serious defect, the absence of clear self-characterization. The title, to be sure, is very suggestive. But what, we are at once prompted to inquire, is a 'logic of character'? That it involves an analysis of 'organized spiritual structure' in general, and without reference to the special circumstances which condition the individual life, is made clear; as is the fact that it deals with life normatively rather than psychologically. But beyond this point we are left to gather the method from the results of its application. The succession of the phases of character which are described is not an historical succession. It is not safe, we are told, to follow the historical development of the race, or of the individual, if we are to grasp 'the abstract dialectical process which is the true but hidden law of that development.' Indeed, the phases of character are only abstractly separate at all, since all are 'implicitly' present in each, and character is essentially indivisible. The nearest approach to an explanation of the principle of the 'dialectical process' is the following passage:

"The experience of mankind in the course of ages has, by a slow unconscious process of generalization, isolated a number of test-conditions. The normal response of a rational individual to each of these test-conditions becomes the basis of a corresponding number of conceptions of essential elements of character or virtue" (p. 207). Add to this the passage in which the author says that the 'ultimate *raison d'être*' of every normal code, is 'nothing else than the progressive revelation to mankind of the true law of their own innermost being, the condition of self-realization, harmony, unity of life' (pp. 160-161).

We shall expect the elements of character defined to represent an orderly progression from the more crude and indispensable, to the mature and consummate. If such be the intent, the arrangement is questionable. It is difficult, *e. g.*, to see why 'personal character' or 'the logic of duty' is placed before 'practical character' or 'the logic of action.'

If the logical order of the six main divisions of character fails to be convincing this is equally true of their carefully articulated subdivisions.

In the preliminary discussion of the 'psychological elements' of character we are supplied with three 'esthetic' elements, 'sensation,' 'emotion,' and 'disposition'; three 'ratiocinative' elements, 'perception,' 'reflection' and 'judgment'; and three 'practical' elements, 'automation,' 'mimesis' and 'volition.' This classification is very neat, but seems not

to be used at all. Thereafter each successive chapter is similarly divided into thrice three parts; but save in the concluding case of 'love,' 'wisdom' and 'genius,' where the correspondence is explicitly mentioned, these would seem to have no relation whatsoever to the preliminary analysis.

It is to be regretted that the author has not supplied the key to his 'logic.' We can only conjecture that the machinery is moved by the power of 'abstraction,' and that very essential parts of it must be denoted by the phrases 'first or immediate category,' 'second or formal category,' 'third or real category,' etc., which stand at the head of the chapters, but receive no further comment.

Notwithstanding the obscurity which attaches to its logical nexus, this is a most thoughtful and solid book. The style is compact, lucid and at times masterly. When one ceases to puzzle about the meaning of the arrangement, and regards it as only a convenient classification, it is found to add greatly to the richness and clearness of the analysis. As has been noted, there are six general phases of character, distinguished by the dominance in the individual of different controls. These six phases are: (1) Custom, or implicit character; (2) duty, or personal character; (3) action, or practical character; (4) piety, or social character; (5) freedom, or individual character; (6) creation, or universal character. Thus the highest condition of human life is that of creation. The unfolding of this crowning phase of life is seen in the growth of impulse into passion and finally into love; the growth of intuition into 'detachment,' or disinterestedness of judgment, and finally into wisdom; or aspiration into inspiration, and finally into genius.

"Love, wisdom, genius—in these three principles culminate respectively the emotional, theoretical, and practical potentialities of human character. They are at once its flower and root, its final cause, and the end whose realization it has, or should have, ever before it" (p. 199).

The emphasis which the author thus places upon the individual's self-expression leads him in his concluding chapter to certain profound and eloquent observations upon contemporary ideals and educational methods.

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Les états mystiques. MONTMORAND. *Revue Philosophique.* July, 1905.

The writer's purpose is to compare the descriptions which psychologists are disposed to give of the trance-conditions of religious mystics with the descriptions given by the mystics themselves. The latter are entirely sincere in their accounts and have immediate knowledge of the states in question. For their opinions, M. Montmorand depends chiefly upon the writings of Saint Teresa.

The mystics make great use of the word experience in describing the kind of state they are most concerned with, and which they affirm is a state of entire passivity. As a rule they strive to imagine God, but at times it is their good fortune to feel his immediate presence, to behold him even. They have a 'spiritual' sensation, a sense of fusion of immersion. The spiritual life is compared to a bath of love, or the soul to a sponge in the ocean.

The different degrees of 'experience' show a certain regularity in their sequence and development, which makes it possible to classify them. The best and simplest classification is that given by Saint Teresa. She describes four stages which she calls respectively quietude, union, ecstasy and spiritual marriage. The following account is chiefly hers.

Through daily meditation upon the mysteries of the faith, the mystic comes to embrace them all in a single view. There is a progressive simplification of content. Reflection tends to give way to sensory and emotional states, to impulses of love. Gradually these become merged in a vague and general idea. The spirit, troubled with an uncomfortable torpor, feels itself drawn invincibly toward a sublime object which it can not clearly distinguish and which it despairs of reaching. The phantasmagoria of the imagination have now departed, and intrusions of reason do not interrupt the continuity of pure intuition. Although more or less painful, it is the state called quietude.

The state of quietude lasts hardly more than a few seconds, unless it has become habitual, in which case it may last, with variations of intensity, several hours or even an entire day. The physical symptoms are as follows: while the subject is at prayer, a mist comes before the eyes, breathing and circulation slacken, the limbs grow heavy, speech comes hard. The spirit, however, is gathered to itself, and when the trance is at its height, all the faculties are as if fascinated by the divine object dimly perceived. But memory and imagination revive in a disturbing way and cast about for words that they do not find. Mystics complain that they are continually distracted during quietude.

In the second stage, the stage of union, the subject is physically more passive than in the first. There is not enough spontaneity to create distraction. As Saint Teresa describes it, the soul is awake with respect to God, but asleep concerning itself and all things of the earth. The soul knows only that it loves, but what it loves or how or what it desires it does not know.

In the third stage, ecstasy, the very notion of the external world is lost. The body keeps whatever posture it has when the trance comes upon it. The faculties are wholly absorbed in God. This condition does not last long. Saint Teresa doubts that it ever lasted half an hour in her own case. In ecstasy, the feelings of fusion and immersion characteristic of the previous stages seem to be often replaced by a kind of vision, dazzling, blinding and painful, but which lasts only an instant and leaves the soul full of torturing regret and longing. This distress of spirit comes to an end in a stage called spiritual marriage, the goal of the mystic's endeavor.

In the spiritual marriage the absorption in God becomes permanent or at least habitual. The soul continues to enjoy unchanging repose, freed, says Saint Teresa, from inward dry and painful conditions and from the burning transports in which it has hitherto been exhausted.

It is the unanimous judgment of those who have experienced these conditions that the most characteristic feature of them is the attitude of

love. A more or less passionate self-surrender seems to take the place of perception and understanding. And yet the mystics declare that wonderful truths are revealed to them. Saint Ignatius felt that he had learned more in a single hour of contemplation than he could have learned from all the lessons of all the doctors of the earth. The truth thus learned is, however, quite inexpressible. There is abundant testimony that language quite fails to convey the revelation. One has only to recall the emphatic declaration of Saint Teresa that in the advanced stage of contemplation there is neither thought nor comprehension nor any imaginative content. The mystic theologians do not admit, however, that the soul, on this account, ceases to have experience. They speak of an inner illumination which takes the place of discursive thinking. Yet freed from matter and brought back to its original spiritual state, the soul begins just when it seemed to cease from acting, 'to perform its most genuine and most natural operations.' Thus Bossuet.

Psychologists group all the various types of mystic absorption under the one heading of ecstasy. On this point there is no opposition from the theologians who admit that quietude, union and ecstasy are different stages of the same process. Psychologists admit that there are various forms of ecstasy, but are not concerned to distinguish them, in view of what they believe to be an essential identity, whether produced by physical causes or by hypnotic suggestions or by the religious imagination. M. Montmorand would distinguish the religious trance from the obviously pathological type on the ground that it differs from them both in its cause and in its physical and moral effects. Saint Teresa declares that the trance, however long it lasts, is never injurious to health. And the moral effects are beyond question. The will is often aroused and fortified to a marvelous degree, and permanently so.

M. Montmorand would account for the religious trance and its effects by a psychological variation of the orthodox theological explanation. The latter conceives the mystic experience as an inner illumination in which the objects of religious aspiration are immediately apprehended. M. Montmorand has recourse to the conception of subliminal consciousness as the source of inspiration. At first, in the shape of hallucinations come what Myers has called 'subliminal messages.' Later, when the personal consciousness has lapsed, it is impregnated, as it were, with germs from the subliminal, which, when the trance is at an end, expand into generous resolutions, holy wishes, and virtues apparently spontaneous.

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La Moralité indirecte de l'Art. FR. PAULHAN. *Revue Philosophique*, May, 1905. Pp. 445-473.

That art is, in its essence, non-moral is not inconsistent with its sustaining close relations with morals and real life generally. Indeed, the world of art arises from the same impulse that gives rise to the world of morality, dissatisfaction with the actual and the desire to create an order

of things which shall better satisfy the ends of human life. In response to this demand there arises an ideal world which is the standard and interpreter of the real one. This ideal order, as the product of the creative imagination, is essentially removed from life itself, and, by its principle, non-practical, but yet the boundaries between it and the real world are easily removed, so that its ideals tend to become determination of life itself. By the law of ideo-motor action its suggested ideas become real forces. The attractive form in which these esthetic conceptions are clothed gives added emphasis to their power, although, indeed, a marked splendor in this form may tend to neutralize the force of the idea. This influence upon conduct is found in the more formal arts as well as in those which represent more directly human life and passion, since all art is an organizing power directing to one end the manifold activities of life. As a result we have the professional codes of semimorality.

Again, art has a large share in determining the ideals of life. These are less unified and exclusive than those found by moral reflection, yet, by reason of their greater attractiveness and persuasiveness, even more effective. That there is a certain danger of capriciousness in these esthetic ideals is true, yet even the ideals of morality are not free from change, and art has the compensating advantage of not taking its conceptions too seriously. Indeed, in many respects, art has the advantage of morality. There is a largeness and richness in its ideals which is lacking in those of morality, since the very seriousness of the latter demands a choice between mutually exclusive conceptions of life, whereas art is pleased to entertain a variety of conceptions without regard to their consistency. And, as a consequence, there is a greater opportunity for the free unfolding of ideals and the consideration of their implications. Art is thus an experimental laboratory for the working out of ideas previous to their application to life. A novel theory may be here held in suspense and reality protected against its immediate realization.

Art thus serves to fulfill the function of morals and logic, though making no appeal to the logical understanding. It persuades through the emotions rather than by the reason. Its method is that of hypnotic suggestion, in that through the inhibition of opposing tendencies the mind is made ready for the reception of an idea. It is thus one of the most powerful of social forces even when disclaiming any practical intent. In this influence upon life art is acting contrary to its proper principle, which would keep it free from contact with reality, yet in this it is in accord with all other social phenomena, which no sooner develop their own nature than they are seized upon by society and adapted to its use. Art is thus in its essence unrelated to morality, but by virtue of its qualities necessarily produces an effect upon that real life from which it would cut itself free.

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La psychologie comparée est-elle légitime? ED. CLAPARÈDE. *Archives de Psychologie*, T. 5, No. 17, 1905, pp. 13-35.

The author has made it his task to attempt to refute the arguments of those biologists who insist that the science of comparative psychology is impossible because the mental states of animals can never be known directly. Certain physiologists, as Claparède observes, and as is well known to students of animal behavior, have carried the matter so far as to construct an objective terminology for the replacement of psychological terms. In so doing Beer, Bethe, and von Uexküll, who have been the most active promoters of the new mode of description, have consistently followed the ideal of translating all subjective terms into physiological terms.

Claparède argues that although this tendency toward objective description may be desirable, its present results are unfortunate, for it introduces cumbersome phrases, circumlocutions, vagueness and inaccuracy, because of the imperfection of our knowledge of physiological process, and worst of all, it tends to overemphasize the importance of the objective. The mere fact that we are able to translate all subjective terms into objective terms does not simplify our scientific materials, but it does incline us to the neglect of the subjective. Whatever the nature of our terminology, we shall still have subjective facts to deal with; the problem is one of method. The terms of physical science are objective, and in so far as psychology, whether human or comparative, is to be considered a natural science its descriptive terms also are objective. Logically the goal of psychology in the commonly accepted sense of the word is completeness of objective description. That this goal is not at present attained does not, in my opinion, fully justify Claparède in his criticisms of the biological form of description. It is a commonplace fact that we know not even the states of consciousness of other men, to say nothing of those of animals widely differing from us in structure and behavior. Clearly the biologists perceive the danger in using terms of subjective connotation to refer to phenomena which we know only by inference. The bases of our inferences concerning the mental states, moreover, are those very objective phenomena which the biologists of the Beer-Bethe-von Uexküll school propose to designate by their objective terminology. With reason, it seems to me, they claim that we do far better to limit our attempts at scientific description to those phenomena which are the material of knowledge of all observers. What they propose to study is not animal consciousness, but animal behavior. Their arguments do not touch comparative psychology, for such a science must be based upon the results of the study of animal behavior, structure, etc.

To show the dangers of the use of the objective terminology is worth while, but it seems scarcely necessary to attempt to justify the existence of psychology. Of psychology, I say, because human psychology stands or falls with comparative psychology. If the study of the mental life of lower animals is not legitimate, no more is the study of the human consciousness. Claparède does not bring out as clearly as he might the

importance of the fact that psychology is either a matter of introspection or of indirect, inferential study. Comparative psychology necessarily depends wholly upon the method of inference. All that the biologists referred to have said is that they are interested in the materials which the comparative psychologist must use, but not in the inferences which he draws from them. If pressed for a reason, they admit that these inferences do not seem to them to furnish material for a natural science. Apparently they lose sight for the moment of the fact that inferences underlie all our sciences—that without this subjective phenomenon, which, to be sure, they attempt to describe in terms of reaction, no scientific work would be possible. The consideration of assumptions and inferences is something which the biologist does well to avoid unless he is prepared to admit that the study of animal mind is as legitimate as the study of behavior.

A surprisingly large part of this paper is devoted to a discussion of Nuel's book on vision and the ridiculing of the inconsistencies and absurdities of the objective terminology as it therein appears.

Claparède reaches the heart of the matter when he says we must not think that we have enriched our knowledge of a psychological fact by translating it into physiological terms. We have added something of value to our knowledge, but not to our knowledge of the materials of psychology. The conclusion of the discussion is given in the following words of the author: "*La psychologie comparée est-elle légitime? Oui, tout autant que la psychologie humaine. Quand les physiologistes auront édifié à côté de la psychologie une physiologie cérébrale, j'entends une physiologie vraie, et non le calque psychologique qu'ils nous servent sous ce nom,—une physiologie capable de parler toute seule, et sans qu'il faille que la psychologie lui souffle, mot par mot, ce qu'elle doit dire,—nous verrons alors s'il y a avantage à supprimer la psychologie humaine, et par suite, la psychologie comparée.*"

"Mais nous n'en sommes pas encore là."

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Intorno al Progresso Odierno del Prammatismo e ad una Nuova Forma di esso. GIOVANNI CALÒ. *Revista Filosofica*, Marzo-Aprile, 1905.

The writer begins by reminding us that pragmatism is no new thing in the history of thought. Indeed, one can say that every great period of theory and rationalism is followed by another in which the rights of practical reason are asserted. Signor Calò regards every theory of knowledge or of conduct in which the will is put in the foreground as a form of pragmatism, and accordingly he discovers abundant preparation for the pragmatism and humanism of to-day.

In the philosophy of the second half of the nineteenth century, two circumstances have cooperated in the development of pragmatism: on the one hand, the influence of the Kantian line of thought, on the other hand, a natural reaction against an excess of mathematical theory in the growth

of science during three quarters of the century. We can accordingly distinguish two currents in modern pragmatism. One of them is derived from Kant, and is wholly a French movement, headed by Renouvier and Pilon, and recognizing its precursor in Jules Lequière. The writers of this section do not deny the cognitive activity, nor do they identify it with the will or with feeling, but they unify all these elements in the act of judgment.

The other current of pragmatism may be called radical. It recognizes Charles Pierce and James as its chief representatives and has had its philosophical development chiefly in England and America. In the second current, as well as in the first, it is easy to make out rather different tendencies. The 'will to believe' of James is not to be identified with the original pragmatism of Pierce, nor with what has been called 'humanism,' which, while receiving its philosophical formulation from Dewey and Schiller, has been represented in Germany by such men as Simmel, Deussen, Eucken, Mach, Herz and Ostwald. The so-called neopositivism of France is in contrast with the idealistic indeterminism of Boutroux and Rauh as well as with the religious pragmatism of Ollé-Laprune and Brunetière. But, notwithstanding all this diversity, we can recognize the two characteristic features of what we may call humanism, the tendencies, namely, to make man the measure of reality, and to give the latter an anthropocentric direction.

If, finally, we observe that pragmatism intends not merely to exhibit the relations between intelligence and will, but means also to give us a true theory of knowledge and reality with the will as a foundation; if one sees this tendency penetrating all branches of speculation, and in the history of philosophy bringing into sharp relief the close connection between metaphysical theories and social attitudes; if we recognize also in psychology as corresponding to pragmatism the theories of the volitional nature of mental phenomena defended by Wundt, Paulsen and Fouillée it will be evident that pragmatism is such a large feature in present-day thinking that every serious thinker must take account of it.

If pragmatism is a thorough-going principle it must have consequences for ethics. How are these to be estimated? Here we come to the new form of pragmatism mentioned in the title of the article. The pragmatism in question is put forward in a work, '*Le finzione dell' anima*,' by Marchesini, and Signor Calò discusses with fairness, but ultimate disapproval, the ethical pragmatism there explained.

The trouble with pragmatism on the side of ethics is, according to the writer of the article, that it issues in individualistic separatism, and takes from ethical convictions precisely their essential character, the character, namely, of transcending individual cases.

Calò reminds us that Nietzsche, the most conspicuous individualist in ethics, was a pragmatist also. Nietzsche has often insisted that reality contains nothing of what man reads into it,—neither law nor chance nor purpose nor blind mechanism nor morality nor immorality,—that man alone has created all about him the world that interests him. The true

creator of laws and values is the will; wherefore the will to believe should be, in modern philosophy, the will to control.

Marchesini sees that individualism is wrapped up in pragmatism, and accepts the individualistic point of view as the presupposition of his doctrine. As there is no absolute truth for the intellect, so there is no absolute moral ideal. Morality is always personal and individual, and can not claim to be effectively anything else.

The individualistic nature of morality is grounded for Marchesini in the reciprocal transcendency of real things. An ethical ideal that is independent of my own nature is transcendent with respect to my concrete individuality. It is one of those fictions of the mind to the study of which Marchesini's book is evidently devoted. Marchesini is not discouraged, however, at the discovery that an objective ideal is a mental fiction. This discovery is in fact a saving experience; for if we take what is a symbol, and make of it a reality, and set it up as end and object of our activity, the aspiration toward it can lead only to discouragement or to ecstasy or to contemplative mysticism. The construction of fictions is an act that is manifest in all the regions of mental life, and the ethical fiction of an absolute ideal functions as a guide and a check to conduct, and controls it in the interest of social organization. The maxim which Marchesini reaches is as follows: 'Act as if what is true socially and is socially imposed as absolute, were true and absolute also for you,'—or in other words, 'act as if you were not you.'

In his criticism of this doctrine, Signor Calò has overlooked one rather obvious point of attack. If Marchesini bases his whole theory on the positivistic assumption that real things are reciprocally independent and transcendent, and then deduces from this fact the conclusion that the idea of such reciprocal independence is a mental fiction, the critic need not take the conclusion very seriously. One has very strongly the impression, however, that Marchesini has written a decidedly interesting book.

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JOURNALS AND NEW BOOKS

ARCHIV FÜR SYSTEMATISCHE PHILOSOPHIE. Band XI, Heft 2, May, 1905. *Vorbemerkungen zu einer 'allgemeinen Entwicklungsgeschichte'* (pp. 125-169): B. WEISS. — For the purpose of peace and justice in society there is needed an encyclopedia of science from the evolutionary point of view, to the rejection of anthropocentrism, of materialism and of idealism. Evolution in individuals implies essentially aggregation, with three stages: of differentiation, integration and torpidity. Race evolution is continuous from atom to man. Evolutionary history has six large with several subordinate divisions. *Künstlerische Regelmässigkeit* (pp. 170-177): K. WORM. — The laws of art impose themselves on the genius; he imposes rules on artists. *Zur Methodologie der Wirtschaftswissenschaft* (pp. 178-190): F. LIFSCHITZ. — The work of eco-

nomic science is simply to explain the evolutionary tendencies of economic life; it is not normative. The distinctions between theoretical, empirical and practical economics are not valid, just because all are concerned simply with the relation of cause and effect. *La philosophie en France* (pp. 191-196): C. Bos.—Reviews of Allier's 'La philosophie d'Ernest Renan,' Roberty's 'Frederic Neitzsche' and Tardieu's 'L'ennui.' *La dualita oggettiva universale come riflesso della forma dualistica dell'appercezione mediata* (pp. 197-218): G. D. VALLE. The cognitive function is essentially a mediating function. The distinction between subject and object is set up in and by the cognitive process, and it is vain to try to overcome it. The frequent antithetical pairs, extension and spirit, mass and movement, matter and force, quantity and quality, etc., are echoes of this fundamental cognitive distinction. *Bericht über die deutsche ästhetische Literatur aus den Jahren 1900-1905* (pp. 221-244): A. TUMARKIN.—Reviews of Lipps's 'Ästhetik,' and Dahmen's 'Die Theorie des Schönen.' *Die neuesten Erscheinungen auf dem Gebiete der systematischen Philosophie. Zeitschriften. Eingegangene Bücher.*

ANNALEN DER NATURPHILOSOPHIE. Band IV., Heft 3, July, 1905. *Ueber die Arbeit als Rechtsboden* (pp. 281-300): K. W. JURISCH.—Germany is still chained by the old Roman law for which only the corporeal or tangible is a thing, wherefrom result many absurdities and a barren schematism. Every product of human work should stand under the law's explicit protection, a reform in which university theorists should lead. Work is defined, in every sphere, as the overcoming of obstacles. *Das duale System der Harmonie* (pp. 301-338): A. V. OETTINGEN.—A continued exposition of the tonic and phonic elements of harmony, being sections IV., V. and VI. *Kant's Lehre von der Kausalität* (pp. 339-385): O. BUTSCH.—By the 'identity of the mind's action' as the essential source of unity and regularity in apprehension, and of the existence of nature, Kant must have meant simply our 'constant sense of thinking.' Causal necessity is due merely to the absence of contrary experience. Solipsism would follow from the incapacity of the mind really to be affected by objects outside it. Kant's comparison of the perception of the house, and of a boat on a stream asserts objective causality, contradicting his fundamental position. Other contradictions cited and analyzed. For the apriority of causality Kant advanced no scientific proof. *Vorbemerkungen zu einer Neugrundlegung der Wirtschaftswissenschaft* (pp. 386-403): J. ZMAVC.—The demand for an economic based on the concept of work rather than of supply and demand is supported by the facts of the limited resources of the earth and by the unprecedented severance of classes. *Neue Bücher* (pp. 403-416): Reviews by 'W. O.' of the following, among others: C. Siegel, *Zur Psychologie und Theorie der Erkenntnis*. H. Sewarz, *Der moderne Materialismus als Weltanschauung und Geschichtsprinzip*. K. Heim, *Das Weltbil der Zukunft*. R. Semon, *Die Mneme als erhaltende Prinzip im Wechsel des Organischen Geschehens*. H. Swoboda, *Studien zur Grundlegung der Psychologie*.

KANTSTUDIEN. Band XI., Heft 3 u. 4. *Luther und Kant* (pp. 351-492): BRUNO BAUCH. - A detailed comparison in large measure contesting Harnack's opinion in the matter, and concluding that 'In Kant Luther's moral-religious sentiment attains the standpoint of reason.' It treats of Luther's opinion as to the relation of faith and reason, his idea of the supreme good, and his conception of God. *Anfänge des Kritizismus. Methodologisches aus Kant* (pp. 493-517): A. RIEHL. - The rise of criticism, incomparably the most significant event in modern philosophy, has three stages: analysis of concepts with examination of their genesis; probing of the concept of experience with skeptical results; the proof that while experience is knowledge, knowledge is limited to experience. The critique is not psychological but objective. *Reden zur Feier der Wiederkehr von Kant's 100 Todestage* (pp. 518-534): H. RENNER. - A summary of the several German panegyrics called forth by the anniversary. *Zwei dänische Festgaben zum Kantjubiläum*: A. AALL. *Zur Blattversetzung in Kants Prolegomena*: SITZLER. *Nachwort*: H. VAHINGER. *Recensionen* (pp. 545-557): including, B. Christiansen, *Erkenntnistheorie und Psychologie des Erkennens*: F. MEDICUS. A. Riehl, *Zur Einführung in die Philosophie der Gegenwart*: J. W. A. HICKSON. E. Katzer, *Das Problem der Lehrfreiheit und seine Lösung nach Kant*: SULZE. *Selbstanzeigen* (pp. 558-565). *Mittelungen*.

Bodrero. *Il principio fondamentale del sistema di Empedocle*. Rome: Loescher. 1905.

Ellis, Havelock. *Studies in the Psychology of Sex*. Philadelphia: F. A. Davis Co. 1905. xii + 270 pp. \$2.00.

Hyslop, James Hervey. *Problems of Philosophy; or Principles of Epistemology and Metaphysics*. 8vo. Pp. 14 + 647. \$5.

NOTES AND NEWS

FROM *Nature* we take the following: "In the *Bulletin of the American Mathematical Society* for June, Dr. Edw. Kasner directs attention to a significant dialogue in Galileo's 'Discorsi e dimostrazioni matematiche' of 1638, in which modern concepts of infinity as laid down by Bolzano, Cantor and Dedekind appear to have been foreseen by that philosopher. In this dialogue Salviati points out to Simplicio that since every number has a square, there must be as many squares as there are numbers, but, on the other hand, since there are many numbers which are not squares, there must be more numbers than squares. In answer to Simplicio's question, 'What is to be our conclusion?' Salviati gives the following remarkable reply: 'I see no escape except to say, the totality of numbers is infinite, the totality of squares is infinite, the totality of roots is infinite; the multitude of squares is not less than the multitude of numbers, neither is the one greater than the other; and finally, the attributes of equal, greater and less, are not applicable to infinite, but solely to finite quantities.'"

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

PSYCHOLOGY AT THE ST. LOUIS CONGRESS

WITH a single exception all the psychological papers presented at the St. Louis Congress have now appeared in print.¹ In the opinion of the editor of this JOURNAL the time is therefore ripe to take stock of these contributions to our knowledge and mutual understanding.

Two very vivid impressions of a general kind instantly force themselves on the reader of these addresses. The first has to do with the amazing breadth of the domain preempted by contemporary psychology and the astonishing development of methodological technique which has evidently been achieved in many of its provinces. Specialists are, of course, keenly alive to this fact, but it is brought home with peculiar pungency by a serial perusal of these St. Louis papers, flanked as they are on the one hand by the distinctly metaphysical considerations of Mr. Ward's address and on the other by the eminently empirical intricacies suggested by the papers of Messrs. Titchener, Janet and Prince. Surely there are few readers capable of following all of these addresses with intelligent appreciation, and still fewer to whom they could all be of vital interest. The unification of knowledge which this congress was to glorify is, in this department at least, for the most part a figment of the imagination, an ideal toward which progress may ultimately bear us, but from which at the present moment we are conspicuously remote.

The second impression is one of disappointment that the list of speakers could not have been more fully representative. Those who appeared on the platform were all eminently worthy of the honor accorded them, but an international program from which one misses the names of Ribot and Binet, Wundt and Stout, James and Dewey—to mention no others—is hardly to be regarded as entirely representative. No doubt this circumstance was due to insurmountable difficulties, but the fact remains what it is, and in its personnel, at least, the St. Louis program must be voted but a partial success.

¹ Mr. MacDougal's paper has not yet been published.

When one comes to the papers themselves, one is again likely to feel a little disappointment that so distinguished a group of speakers should have offered upon an occasion of such moment so little that is fundamentally fresh. This outcome is, however, an all but inevitable consequence of the plan upon which the program of the congress was based. The principle involved, unavoidably caters to a retrospective and somewhat obituary attitude of mind, and *pari passu*, tends to discourage in some measure the more striking and personal forms of originality. It is the voice of authority speaking of things past which we chiefly hear in these addresses, rather than the voice of discovery and revelation. This no doubt accounts for the seriousness of tone which characterizes most of the papers. The delightful persiflage of parts of Mr. Cattell's paper affords almost the sole exception to this rule. To be sure, science on dress parade is always prone to be a bit sombre, and this, perhaps, is as it should be. In any case, in passing judgment on these addresses, one has to remember the limitations with which their writers were hedged about.

Four sections were provided to meet the various interests represented by the modern organization of psychology—a section each for general psychology, experimental psychology, comparative and genetic psychology, and abnormal psychology. Two addresses were delivered before each section, and Messrs. Baldwin and Cattell presented papers at a general introductory session.

In Mr. Baldwin's opening paper on the history of psychology² we have the author at his best. His outline is bold, clear and suggestive, and several of his own recent contributions to psychological theory are incorporated in his interpretations in a way which distinctly clarifies their meaning. One is moved to criticism only by certain omissions, and by certain rather daring *obiter dicta*. But in a brief address something must inevitably be sacrificed to the exigencies of the occasion.

The gradual rise among the Greeks of the distinction between the inner and the outer world is briefly traced and the reason for a failure to found a science of mental contents is referred to the fact that the technique of control over these inner materials was not yet elaborated, and consequently they appeared intractable to scientific treatment.

In his account of medieval and Renaissance psychology Mr. Baldwin is disappointingly brief. To be sure, it has been traditional to view these periods as relatively barren for psychology proper, yet this is but one reason the more why one wishes that the

² "Sketch of the History of Psychology," *Psychological Review*, 1905, pp. 144-165.

author had seen fit to apply to it more fully his talent for fertile and ingenious interpretation.

Modern scientific psychology is characterized by (1) a scientific naturalism, *i. e.*, the conception of all phenomena of every kind as parts of a natural order under the domain of discoverable laws; and (2) by a scientific positivism, by which Mr. Baldwin means the theory that a method of research is possible for the genuine ascertainment of these governing laws. These characteristics are vicarious heritages borrowed from the physical sciences, which have long possessed them, and from biology, which has acquired them only at a relatively recent date.

Nineteenth-century psychology Mr. Baldwin regards as the immediate outgrowth of influences emanating from Hume and Rousseau. By this statement is implied that in the Locke-Hume tradition we have the individualistic aspects of psychology emphasized, whereas with Rousseau and later in Comte the social elements come in for their proper recognition.

The respective influences on psychology of biology as represented by Lamarck and Darwin and the physicomathematical sciences represented by Fechner are given due weight, and the author then proceeds to a brief but illuminating exposition of the specific points at which these various influences become most conspicuous. The failure of the genetic principle in psychology to gain a firm foothold, despite the influence of biology, is much emphasized and two of our great psychologists of the end of the nineteenth century, James and Wundt, are criticized for a failure fully to recognize this principle, notwithstanding their positivistic and naturalistic tendencies.

Mr. Baldwin concludes with a word of prophecy in which he predicts that positivism and naturalism are here to stay, that psychology will in the future be thoroughly social and also thoroughly functional. Structural psychology, looking toward a psychic atomism, is doomed to extinction.

The last prediction savors a little of writing the funeral orations of persons still enjoying vigorous health. Undoubtedly, in the present writer's opinion, structural psychology must be conjoined with a psychology of function, and undoubtedly the psychology of function is that which will stand in closest relations to practical interests and to those other sciences which desire, as does sociology, for example, to utilize the product of psychology. But it appears equally patent that a functional psychology which lacked wholly a correlative structural psychology, would be at best but a disembodied spirit, wandering restless over an unreal world.

Mr. Cattell's brief but brilliant and racy paper³ leads one to

³ 'Conceptions and Methods of Psychology,' *Pop. Sci. Monthly*, 1904, pp. 176-186.

regret that he does not oftener allow the rigors of editorial labor to permit his taking pen in hand for the discussion of the fundamental problems of psychology. To be sure, if there were in his audience any of the old-school critics who found the style of James's 'Psychology' indecorous, they must have shuddered at certain of Mr. Cattell's passages. But somewhere between indecorum and gloomy sobriety there must surely be an avenue where dignity and charm may both sojourn, and one wishes that our psychological writers might more often dally beneath its grateful shades.

Mr. Cattell sets out with the stimulating contention that psychology can not be defined, and in the next sentence he defines it as that in which 'the psychologist is interested *qua* psychologist.' Upon which one is forthwith moved to inquire—what is a psychologist? This is simply to say that the author finds it difficult satisfactorily to distinguish between mind and not-mind. Consciousness is a peculiarly pervasive kind of thing which keeps appearing when you least expect it. And Mr. Cattell says with much reason that the distinction between mind and matter is the last word of a critical philosophy rather than an obvious distinction to be bandied about by makers of definitions.

Mr. Cattell's definition but utters in a different voice a protest which he formulates again in his plea against all arbitrary and preconceived limitations of the territory of psychology. He would let the psychologist roam just as far afield as there seemed to be any promise of valuable and useful spoils. This is surely sane and modern and unscholastic and welcome. The only limitations which he would recognize in psychology or elsewhere (and much of what he says about psychology is equally applicable to any other science) is that given by the psychological constant (?) the mind of man, the mind of the scientist.

The author has some hard things to say of introspection which has enjoyed, he thinks, a wholly factitious eminence as a psychological method. Many of the most valuable laboratory experiments are, he contends, quite independent of introspection. The present writer fancies himself quite in sympathy with the point of Mr. Cattell's contention, but in his judgment the issue between Mr. Cattell and the victims of his criticism is rather an issue of terminology than an issue of fact. If by introspection one means the reflective analysis of what goes on in one's own mind, then undoubtedly much psychological experimentation is not introspectional. But many moderately competent persons would deny that such experiments are, strictly speaking, psychological at all. They are psychophysical, or psychophysiological, or what not. Their point is not to understand the constitution and mode of operation of mental

states, but something else. Now, by refusing to give any definition of psychology which confines it to mental analysis, Mr. Cattell is able to call all these things psychology and to deny introspection as a universal method. Would it not be logically as defensible and significant to deny introspection as a mathematical method?

Mr. Cattell maintains that the great methods of all science, *i. e.*, the quantitative and genetic methods, are those which are valid in psychology, and here he will doubtless have the sympathy of all his colleagues. This does not mean that genetic psychology and experimental psychology are to become independent departments of psychological science. It means that they are real methods of attacking problems in any psychological field where they can actually be employed.

The author concludes, like Mr. Baldwin, with a word of prophecy—that we shall eventually have a profession of psychology, just as we now have one of law and one of medicine. The business of the profession will be found in the application to the control of human nature of our knowledge about the laws which maintain in its constitution. On the side of pathological conditions, at least, this is surely no idle dream of a day far removed.

In the section devoted to general psychology, Messrs. Ward and Höffding had the floor. Mr. Ward's address⁴ bears in a marked degree the impress characteristic of all his work, disclosing a keen, critical acumen working on a foundation of broad and accurate scholarship. The philosophical flavor is distinctly strong. The metaphysics of psychology is at stake. The argument is so closely articulated as to render very difficult any detailed reproduction of it. We must, therefore, rest content with a merely impressionistic sketch in which we may hope to avoid undue distortion of line and light and perspective.

Mr. Ward feels that one of the pressing problems of the day is the definition of psychology, and in the effort to reach some solution of this difficulty he is plunged at once into a discussion of the relations of subject to object in experience and especially into a consideration of the nature of subjective activity. No one can question that in the past this corner of psychology has been indeed a dark and desolate spot. As Mr. Ward says, psychologists of one stripe have generally confined themselves to the examination of that which is empirically given, without inquiring to whom or to what it is given; whereas another group has postulated some substrate for the given, but has regarded it merely as a necessary hypothesis to account for the existence of the given, not as itself an

⁴ 'Present Problems of General Psychology,' *Philosophical Review*, 1904, pp. 603-621.

actual element of experience. The first of these views apparently involves neglecting altogether one fundamental fact about consciousness, the other recognizes the necessity for some such fact, but in effect denies its existence.

Mr. Ward's suggested solution of this *impasse* strongly suggests the pragmatic light which has recently been shining above the philosophical horizon. The essence of subjective reality, he says, is to be found in selective conative activity. The counterpart to this activity is that which we know as objective reality, and experience is just the interaction of the two. This duality is a real relation antecedent to but never completely covered by reflective knowledge. "A subject *per se* and an object *per se* are alike not so much unknowable as actually unreal." To be sure, conative activity is indescribable and inexplicable save in terms of itself, but this is only to say that 'it is our immediate actual being, that we can not get behind or beyond it . . .'

Space permits but a single commentary upon this view. Can a thing which is only describable in terms of itself be really an object of knowledge; and if not, does the second part of Mr. Ward's solution really (in its actual content as distinct from its verbal formulation) get beyond the position of those who regard the subject as a postulate simply?

The concluding portion of the paper is dedicated to a telling assault upon sensationalistic or atomistic psychology whose contemporary recrudescence Mr. Ward feels to be fraught with menace. The author suggests a few reasons which he thinks explain the vitality of this type of psychological thinking, but he then proceeds to point out that well-attested evidence from every field of psychological study indicates the inadequacy and falsity of the conception of mental life which underlies the atomistic view. Psychological reality is not to be found in isolated mental atoms, but in functional unities of organic action. Atomism and associationalism find their only truth within the limits marked out by habit. Actions which have already become automatic can, indeed, be thus explained, but the formation of habits, the facts of progress in mental life . . . these all fall forever outside such categories. Subjective interest is the thing which originally integrates the presentations that later take on the features of automatism, and interest can never find a real home in the associational psychology.

To all of which one is inclined to respond with a fervent 'Amen,' save that one hesitates to admit that the contemporary atomist is quite so black as Mr. Ward paints him. There are plenty of psychologists to whom Mr. Ward would probably give the name atomist who believe no more than he does that the actual workings of the

mind are statable in terms of isolated ideas and sensations, who nevertheless maintain on methodological grounds, that it is practicable and useful to treat the mind as though this were the case, just as it is at times practicable and useful in geometry to treat a line as an aggregate of points. This view is admirably set forth in the opening sentence of the very next address.

A few paragraphs are given at the end of these discussions, somewhat by way of an appendix, to a reference to the problem of the subconscious and its bearing through the memory processes on the whole psychology of ideation. Taken as a whole, Mr. Ward's paper is highly stimulating and suggestive, and ought to be of real service in inciting to a clearer understanding on these fundamental issues.

Like the preceding address, Mr. Höffding's⁵ paper has a dominantly philosophical tone, and contains many passages which suggest, as in the case of Mr. Ward, the influence of recent pragmatic utterances.

Mr. Höffding calls attention to the obvious limitations on the correspondence between mental reality and the mental elements with which psychology is obliged to work. In the exaggerated emphasis upon the significance of these elements is to be found one of the basal reasons for the tendency toward a voluntaristic psychology in which the facts of emotion, will and individual initiative come to their own. Psychology of this last type finds much comfort in the biological support which it is able to command.

The manner in which the problem of psychology is conceived leads to the division of modern psychologists into two main schools of thought which Mr. Höffding would designate as respectively the analytic and the synthetic, a distinction essentially synonymous with that between intellectualism and voluntarism, between associational atomism and personal idealism. "The task of the synthetic school is to find the special forms of unity and continuity which can not be deduced *a priori*, and then to explain how it is possible that mental life in certain cases can have a sporadic character. The task of the other school is to describe the particular forms and degrees of isolation, and then to explain how there can be unity and continuity in mental life."

The essential truth of the synthetic view is proven, in the author's opinion, by the facts of pathological psychology, from which it seems clear that definite effort is necessary in order to unite the different elements of consciousness. (This point is brought out, as it chanced, in one of the subsequent papers on abnormal psychology.) However much use, then, psychology may—and must—make of

⁵ 'The Present State of Psychology,' *Psychological Review*, 1905, pp. 66-77.

analytical procedure, the synthetic, non-atomistic view of mind is fundamentally correct.

Psychology, so far as concerns its actual modes of procedure, occupies a middle ground between the historical and the physical sciences. As compared with the latter, it is relatively historical. As compared with the former, it is relatively analytical. This seems to be in substance a somewhat roundabout recognition of the genetic element in psychological methodology.

As a further matter of method, Mr. Höffding contends for the recognition of causality as obtaining between mental states. To be sure, we can not formulate this causality in terms of continuity and equivalence, for we have as yet no mental units in terms of which to frame such a formula. But surely, he insists, we have that practical elementary causality which always exists among qualitatively different phenomena, the kind of causality from which science has always set out. Moreover, if the brain processes are causally related to one another, we may safely predicate of the conscious processes an indirect causality at least. To be sure, the only working hypothesis as to the mind-brain connection at present defensible is that of a parallelism of a strictly mathematical variety. What the ultimate relations may prove to be is matter for metaphysics.

Psychology in its intermediate position between the historical and the physical sciences is in a position to clear up many of the obscurities peculiar to these neighboring lines of inquiry. If, for example, it is not possible to deduce pedagogics and esthetics from psychology, it is at least possible to render the deliverances of these sciences far more intelligible by the employment of one's psychological knowledge. Similar is the relation of psychology to epistemology and the philosophy of religion. Psychology does not afford in these cases a principle of prediction or a law from which deductions can be made. It furnishes rather a method of interpretation and appreciation.

Much may be said in rebuttal upon the last two points, but there is a very definite value in knowing where a man of such prominence as Mr. Höffding stands on these basic questions.

The section on experimental psychology was addressed by Messrs. Titchener and MacDougal. We have only the paper of the former gentleman.⁶ This is written in the author's usual clean-cut and incisive manner which always gives one an agreeable certainty of what he is driving at. The paper contains a scholarly and conservative estimate of the work done and still requiring to be done in the field of adult normal psychology. The address is so compact

⁶ "The Problems of Experimental Psychology," *Am. Jour. of Psychology*, 1905, pp. 208-224.

and concise that it is difficult to give a just impression of it without quoting it *in extenso*. The main points, however, may be set down as follows, dwelling almost wholly upon the author's judgment of the work still requiring to be done. This procedure involves some risk of conveying an unjustly depreciatory impression as regards the work already accomplished.

In the range of sensation the great desideratum is an investigation of the organic sensations, to which the author justly refers as almost wholly a closed chapter. The importance of this chapter in its bearing upon the psychology of the self, to mention but a single point, can not be doubted. Much remains to be done in detail upon taste, smell and the cutaneous senses, although the main lines of advance are probably for the most part already laid down. Sight and hearing represent the territory best explored, though even here revision and further research will doubtless be found necessary in many particulars.

In psychophysics, which stands so closely related to the psychology of sensation, Mr. Titchener feels that the main need is for faithful and patient testing of the methods hitherto elaborated rather than for ingenious inventions of new methods. And with this opinion the present writer is heartily in accord. The problem of affection, despite the large amount of work devoted to it, is still in its entirety a frontier territory where disorder largely holds sway. As regards both methods of approach and fundamental principles widespread disagreement is the only uniform thing. In this connection Mr. Titchener expresses a pessimistic estimate upon the plethysmograph as a differential instrument for the study of affection. This avowal is peculiarly gratifying to the present writer, who has for a number of years been in a lonesome minority preaching essentially this doctrine.

The relation of attention to the affective processes needs much further illumination, to say nothing of the very question of the constitution of the attentive consciousness itself, the peculiarities of attention as it appears in the various sense departments, and the mechanism of distraction.

In the field of perception Mr. Titchener sees a demand chiefly for further work along lines already open, although he puts in a plea with which many psychologists will surely sympathize (especially those who have been guilty of text-books), for a banishment of the term perception and a devising of substitutes for it appropriate to the various specific occasions upon which one has to employ it.

Recognition, memory and association all require much further investigation, for which Mr. Titchener thinks it very important to

distinguish between the applied psychology of memory (with which a number of recent studies have dealt) and the theoretical knowledge of the memory process, distinguishing again sharply in the latter province between the psychophysics of memory and the strictly psychological or introspective determination of the memory pattern, etc.

The action consciousness deserves a more strictly psychological, as distinguished from a psychophysical and physiological, investigation. Imagination as a category coordinate with memory and referring to a group of representative conscious forms has hardly been opened up at all. A similar thing is practically true of the more elaborate intellectual processes, although here we have of late had some admirable work upon the judgment and the mental conditions immediately related to it.

The concluding portions of the paper are in part devoted to a few timely criticisms upon certain specific forms of experimental psychology which have enjoyed patronage of late years, particularly that form in which, as Mr. Titchener puts it, you 'throw stimuli into the organism, take reactions out, and then—infer the fact of a change in consciousness.' The glamor of scientific accuracy and worth which can be cast over work of this kind has given it a wholly undeserved repute.

The final point Mr. Titchener makes is a plea for the utmost refinement of method applicable to the problem in hand, whether it be a problem of adult psychology, studied under laboratory conditions, or a problem in the genetic psychology of children or animals. Taken in its entirety, Mr. Titchener's paper is a most instructive and wholesome piece of writing.

The section devoted to comparative and genetic psychology was addressed by Principal Lloyd Morgan and Miss Calkins. Mr. Morgan's paper,⁷ which covers rather a wide range of territory, is fundamentally concerned with elaborating the problem of genetic sequence. The primordial phenomena from this point of view are biological reactions. These are followed at a higher level by reactions in which feeling-tone appears, and finally we come upon the ideal schemes of ideal worth by which conduct in its higher phases is governed.

The essential business of comparative and genetic psychology, by means of which such principles as the above have been reached, is found in investigating the nature and mode of development of mental processes in their synthetic aspect. Its aim is explanatory rather than descriptive and it fails of its mission if it does not

⁷ 'Comparative and Genetic Psychology,' *Psychological Review*, 1905, pp. 78-97.

succeed in throwing light on the principles of general psychology.

Surely this is too modest an estimate of the place of comparative and genetic psychology. It will be welcomed into the rank of psychological investigation whether it is always able definitely to articulate its results with generally recognized principles or not. Moreover, this statement seems to depreciate needlessly the scope of description in these new branches of psychological research. The instinct to keep near established principles is doubtless sane, but this ought not to involve the danger of bias in favor of preconceived doctrine, nor should it prejudice fresh and accurate description of the phenomena involved. Explanation is of course an ultimate ideal of all psychology, but description is a necessary handmaid for this enterprise. After all, Mr. Morgan's point concerns a matter of emphasis, and on this there need be no serious disagreement.

In the course of his address, Mr. Morgan brings forward one ingenious conception, a conception which has, perhaps, principally a metaphorical value, but which is in any case fertile of suggestion. He compares the general control mechanism of the nervous system to an environment by which the automatic system finds itself surrounded. Conduct from this point of view is the product of heredity (the automatic system) into environment (the higher control system). To be sure, in human evolution there is always a striking transfer of control from the organism merely as such to the social environment. On the psychological side the counterpart of this is found in the higher mental processes and especially in the elaboration of language with its double psychological and social character. It is on this level that we come upon the controlling influence of the ideational processes in distinction from the more purely perceptual activities which probably are the main factors in the determination of animal behavior.

Miss Calkins spoke upon the limitations of comparative and genetic psychology.⁸ Miss Calkins's address, in spirit and tone, is diametrically opposed to that of Mr. Cattell, already referred to. She is all for drawing lines and marking off distinctions. He is all for letting down the bars in every direction.

In the first place, Miss Calkins denies the possibility of a genetic psychology to the upholders of any form of the Humian conception of the self. If consciousness is in reality merely a succession of ideas, you can have no genetic phenomena to study, for nothing continues to be the subject of development. We must have a self of some sort in order to have in sober truth any such science as genetic psychology. Genetic psychology is, then, the study of developing

⁸ 'The Limitations of Genetic and Comparative Psychology,' *British Journal of Psychology*, 1905, pp. 261-285.

selves. Moreover, genetic psychology is primarily individual, although through the imitative factors involved in learning, we come in the course of development upon a social aspect which leads out into a race psychology.

Comparative psychology has as its first concern the determination of the criterion of consciousness. The only point in which the various antagonistic theories upon this subject agree is in their recognition of 'adapted reactions' as indubitable evidence of the presence of consciousness wherever such reactions can be detected. But the continuity theory of course maintains that consciousness and life are coextensive and that the inability to point out adaptive reactions with certainty can never be accepted as conclusive evidence of the absence of mental processes. Miss Calkins's analysis of the arguments on these points is extremely skillful and lucid. In point of fact, comparative psychology is at the present time actually as broad as the phenomena of animal life.

The problem of the nature of animal consciousness Miss Calkins attempts to attack by summarizing the results of a large group of investigations upon animals representing various stages of organic development. She maintains that, even in the simplest, crudest form of consciousness imagination is implied. The animal learns to do something better than he did at first, and does it even under changed conditions. It certainly seems probable that certain animals have processes comparable in some respects with human imagery. But the present writer, at any rate, feels that in the case of the very low organisms, the assumption of even a rudimentary type of imagery is highly fanciful. Miss Calkins is surely on firmer ground when she says that even the higher animals react chiefly, if not invariably, to total concrete situations, not to isolated relations. Moreover, she truly says that our knowledge of the extent of social factors in animal consciousness must wait upon an adequate objective criterion of imitation. A few general statements on child psychology conclude this keen and instructive analysis of the subject in hand.

Abnormal psychology was represented by Messrs. Pierre Janet and Morton Prince. M. Janet's address⁹ deals primarily with the phenomena of oscillating mental levels which present us, in his judgment, fundamental problems for both normal and abnormal psychology. His interesting paper is in large measure a running analysis of the symptomology of these states.

Normal oscillations of the character at issue are encountered in fatigue, in sleep, and in emotional states. In fatigue, for instance, we find exaggeration of movements, modifications of reflexes, and disturbances of the associative memory processes. In sleep, or 'sleeps,'

⁹ 'Mental Pathology,' *Psychological Review*, 1905, pp. 98-117.

as he maintains we should more precisely say because of the divergent character of many of the phenomena included under this term, we find attention and will are lacking, the consciousness of personality is disturbed, and upon awakening amnesia is present in varying degrees. Emotion discloses various related disturbances and especially the extreme forms of depressor and excitor phenomena.

Correlated with these oscillations of normal life are such abnormal conditions as we meet with in hysteria and in the obsessions. Just as in fatigue and in sleep, so in hysteria the characteristic symptom is a narrowing of the conscious field. In this particular, the two groups of phenomena show themselves identical. In the obsessions we meet with certain mental disturbances correlated with motor and visceral irregularities. Taking all the available facts into account, it seems clear that the several functions of the nervous system are by no means equally difficult to execute. It is the most complex and most difficult which first go to pieces under the influence of undue strain or of disease. As M. Janet puts it, 'mental processes break down more quickly the higher their coefficient of reality.' From this point of view, imagination and abstract reasoning are not the highest mental operations. At least, not the most difficult. It is only when they have to do with *felt* reality, with *present* pressing problems, that they become difficult.

This conception gives an interesting functional classification of mental processes cross-sectioning the common classification of content. From this standpoint we must think of reasoning *per se*, not so much as a specific form of mental operation; we must rather inquire into the precise objective and subjective conditions under which a reasoning process is called forth, if we wish to give it its proper psychological setting. Supported by the weight of M. Janet's authority, we may look to see this conception adopted tentatively at least, and its application to other mental processes worked out in detail.

The address of Mr. Prince¹⁰ contains an admirably clear and conservative presentation of certain fundamental aspects of contemporary work in abnormal psychology.

He proposes a division of abnormal phenomena into two great classes: first, those of dissociation or weakened synthesis, such as the anesthetics, amnesias, and paralyses, divisions of personality and changes of character. In the second group belong the automatisms (motor activities which defy the will), such, for instance, as the obsessions, the fixed ideas and impulsions. These divisions are not to be understood as reflecting mutually exclusive phenomena, but simply

¹⁰ 'Some of the Present Problems of Abnormal Psychology,' *Psychological Review*, 1905, pp. 118-143.

as characterizing fundamental types of mental disturbances. The future of abnormal psychology can be considered as chiefly dedicated to unraveling the complexities of one or other of these great types of disease.

Mr. Prince rightly regards the problem of the subconscious as constituting one of the most compelling with which abnormal psychology is confronted and a large part of his paper is devoted to a discussion of the principal matters here at stake. Indeed, psychology of every kind is sorely in need of illumination on these points.

The author examines with great fairness and care the various lines of evidence (double personalities, hypnosis, automatism, absent-mindedness, etc.) upon which certain psychologists have been wont to assign to subliminal mental conditions a high degree of importance in the affairs of normal mental life, and he comes to the conclusion that the facts by no means warrant the interpretation which has been given them. The details of Mr. Prince's argument can not be cited, but the reader is cordially recommended to the original. The present writer was undoubtedly biased in the direction of Mr. Prince's view before reading his paper, but the array of considerations which the latter has brought together are certainly impressive and, so far as they go, convincing.

The inquiry as to the subconscious inevitably raises the question as to the nature of the dissociating mechanism by means of which the phenomena previously referred to are produced. It has not only proved possible to group together as instances of dissociation such mental diseases as aboulia, paralysis and the amnesias, but it is also possible to regard sleep, hypnosis, somnambulism, etc., as dissociative phenomena. It is a matter of distinct interest to remark that, although the proximate causes which lead to these phenomena of disaggregation may be and often are psychological in character, the dividing lines which seem actually to be followed are rather physiological. At all events, they suggest no psychological relations. Mr. Prince regards it as probable, therefore, that there exists some normal physiological dissociating mechanism which may operate more or less all the time in normal experience, but which becomes exaggerated and perverted in its action during disease.

Taken in their entirety, these papers give the psychologist a flattering sense of the massiveness and dignity of the science which he espouses. So much of solid achievement to stand upon, so wide a territory already laid under contribution,—surely these things augur a rapid advance and the speedy realization of those dreams of conquest which fifty years ago seemed the chimerical creatures of overweening ambition.

JAMES ROWLAND ANGELL.

MEASUREMENT OF TWINS¹

THE following is a summary of the results of a study of the comparative importance of original nature and training in the case of fifty pairs of twins. A detailed account of the investigation will be published shortly.

The Resemblances of Twins and of Siblings

From the information at hand, which is not so satisfactory as information I hope to obtain during the next few years, the resemblance of twins in mental traits is roughly twice that of ordinary siblings;² according to the actual figures of my measurements of siblings, more than twice. I have reason, however, to believe that the correlation coefficients obtained for siblings are affected by constant errors which make them too low; namely, the selection of mentally unlike pairs by the conditions of the methods of obtaining siblings and the absence of suitable data to make sufficient correction for attenuation. Table 1 gives the facts.

I use the words '*resemblance of*' and '*likeness of*' as synonyms for '*coefficients of correlation between.*' A resemblance of .50 means, then, a Pearson correlation coefficient of .50. I use the terms A test, word test, misspelled word test, opposites test, addition and multiplication to mean the tests, or at times the abilities measured by the tests, to describe which would take too much space.

TABLE 1
The resemblances of twins and siblings compared

Ability	Coefficients of Correlation	
	Twins	Siblings
A test	.69	.32
Word test	.71	.29
Opposites test	.90	.30

I give for siblings the obtained results. Since the correction for attenuation had to be made in an imperfect form, the true resemblances are probably somewhat higher, but not over .40.

The Resemblances of Young and of Old Twins

The older twins show no closer resemblance than the younger twins, and the chances are surely four to one that with an infinite number of twins tested the 12-14 year olds would not show a resemblance .15 greater than the 9-11 year olds. The facts are given in Table 2.

¹ The investigation here reported was made possible by a grant from the Esther Herrman Research Fund of the New York Academy of Sciences.

² Karl Pearson has pointed out that the word *sibling* is a convenient term to denote children of the same parents.

TABLE 2

The resemblances of young and old twins compared

	In Corrected Coefficients		In Raw Coefficients	
	Twins 9-11	Twins 12-14	Twins 9-11	Twins 12-14
1) A test	.66	.73	.58	.67
2) Word test	.81	.62	.62	.49
3) Misspelled word test	.76	.74	.76	.74
4) Addition	.90	.54	.83	.46
5) Multiplication	.91	.69	.81	.53
6) Opposites	.96	.88	.79	.78
Marks in 1), 2) and 3) combined			.71	.69
Marks in 4), 5) and 6) combined			.90	.75
Averages	.83	.70	.75	.64

*The Resemblances in Traits Little and in Traits Much
Subject to Training*

The variations in the closeness of resemblance of the twins in the different traits show little, and possibly no, direct correlation with the amount of opportunity for environmental influences. The traits most subject to training (addition and multiplication) do show closer resemblances than the traits least subject to training (the A test and word test); but on the other hand show less close resemblances than the traits moderately subject to training (the misspelled word test and opposites test). The hypothesis that the true resemblance varies in amount *inversely* with the amount of opportunity for environmental influence would not be irreconcilable with the facts, and the hypothesis that the differences between the different traits are due to chance (including in that term the variable errors of the measurements and the possibility of the unequal inheritance of different traits) is the most probable of all. The difference between the traits most subject and those least subject to training is no greater than the median difference between any one trait of the six and any other. Surely there is no evidence here of any large contribution from similarity of training to similarity of achievement. The facts are given in Table 3.

*The Resemblances in Mental Traits Compared with the
Resemblances in Physical Traits*

It is highly probable from the facts so far given that the similarity of twins in ancestry and conditions of conception and birth accounts for almost all of their similarity in mental achievement,—that only a small fraction of it can be attributed to similarity in training. On general principles it is also highly probable that similarity of ancestry and conditions of conception will produce equal similarity in original physical nature and in original

TABLE 3

The resemblances of twins in traits little and in traits much subject to training

	Coefficients of Correlation	Averages
1) A test	.69	} .70
2) Word test	.71	
3) Misspelled word test	.80 (?) ³	} .85 +
6) Opposites test	.90	
4) Addition	.75	} .795
5) Multiplication	.84	
Marks in 1), 2) and 3) combined	.70 (raw) ⁴	
Marks in 4), 5) and 6) combined	.82 (raw) ⁵	

mental nature. Certain resemblances in original physical nature are in all probability neither increased nor decreased by such similarities and differences of home training as act upon twins and non-related children, respectively, within a group such as ours; *e. g.*, resemblances in cephalic index, ratio of height sitting to total height, eye color and hair color. Other resemblances in original physical nature are so increased and decreased slightly and perhaps not at all; *e. g.*, circumference of head, length of head, width of head, length of forearm and length of finger joints.

If, then, the resemblances of twins were almost entirely due to original nature, we should expect them to be only slightly in excess of the resemblances in physical traits. The existence of the latter as a fact may properly be taken as a partial verification of the former as a general hypothesis. The evidence of its existence is given in Table 4.

Summary and Criticism

These facts prove that among one hundred twins living and attending school in New York City in 1903-4, the mental resemblances of a twin pair are about twice as great as those of a pair of siblings similarly chosen, are as great or nearly as great in the case of the younger as of the older half of the group, are as great or nearly as great in the case of the A, word, misspelled word and opposites tests as in the case of addition and multiplication, and are only slightly, if at all, greater than resemblances in physical traits which could have been caused, in some cases, only by original nature.

The facts are easily, simply and completely explained by one simple hypothesis: namely, that the natures of the germ-cells—the conditions of conception—cause whatever similarities and dif-

³ The raw coefficient was .754. I have no means of correcting for attenuation except indirectly. The corrected coefficient would be at least .80.

⁴ The correction for attenuation would increase this only slightly, since it is derived from seven trials. The true *r* can hardly be above .75.

⁵ The case is as noted in note 4. The true *r* can hardly be above .85.

ferences exist in the original natures of men, that these conditions influence body and mind equally, and that in life the differences in modification of body and mind produced by such differences as obtain between the environments of present-day New York City public school children are slight.

Certain other hypotheses seem possible at first sight, but become involved in great difficulties when one tries to explain all the facts

TABLE 4

The resemblances of twins in mental and in physical traits

In Mental Traits		In Physical Traits	
1. A test	.69	11. Cephalic index	.76
2. Word test	.71	12. Ht. sitting/ht.	.76
3. Misspelled	.80 +	13. Height	.78
4. Addition	.75	14. Height sitting	.83
5. Multiplication	.84	15. Circ. of head	.75
6. Opposites	.90	16. Width of head	.86
7. Combined mark in 1-3	.70 +	17. Arm length	.72
8. Combined mark in 4-6	.82 +	18. Finger length	.71

7, 8 and 12-15 are raw correlations and the correction for attenuation might raise them by .01 or .02.

Median of 1-6	.78	Average of 11-12	.76 (possibly .77)
		" 13-18	.77 (possibly .78 or .79)
Average of 1-6	.78	Median of 13-18	.77 (possibly .78 or .79)
		" 11-18	.76 (possibly .77)
Average of 7-8	.76 (possibly .80)	Average of 11-18	.76 (possibly .77)

by any of them. These difficulties I will point out briefly.

It may be said that all that has been proved of the twins is that they are alike in general mental maturity (*i. e.*, in the points of development which they have reached).

Traits like those tested are of course influenced by maturity directly and indirectly through the relation between maturity and advance in school and the relation between the latter and certain of the traits tested. But maturity is by no means the total cause of efficiency in these traits. Nor is it a cause comparable in amount of influence with individual differences apart from maturity. Nor is there any evidence that there is any greater resemblance of twins in maturity than in other factors, such as eyesight. If maturity were the total cause of efficiency in the six traits measured, these traits should in the same individual show perfect correlation with each other. They do not, nor, indeed, enough correlation to assign maturity a very important place as a contributory cause. If resemblance in maturity were the cause of the resemblances found, these should be largest in the traits most subject to maturity. The opposite is the case.

It may be said that all that has been proved of the twins is that

the environmental conditions from 9 to 14 years count little; that the similarities in environment *in utero* and during childhood are left as possible causes of the resemblances found; and that these are the real causes. But that the conditions *in utero* are the cause of the resemblances of related individuals is disproved by the fact that paternal is as great as maternal resemblance in the case of those traits where parents and offspring have been compared; and that similarities in environment from 0 to 9 years should produce a far greater effect on the children's abilities to add, multiply, mark misspelled words and write opposites than do similarities in environment from 9 to 15 is a notion utterly devoid of probability.

It is equally difficult to accept original nature as a cause of a moderate amount of the resemblance found and to explain the rest as due to training. Suppose, for instance, that some one assumes that the force of the germ-natures,—of the conditions of conception,—is sufficient to produce a resemblance of .20 in siblings and .40 in twins in mental traits. He must then be willing to believe that the likeness in training of a twin pair is enough greater than the likeness in training of a sibling pair, two or three years apart in age, to make the .40 rise to .80, whereas the .20 rises only to .40 or less. He must also be willing to believe either that inborn mental make-up is inherited by a totally different law from that regulating inborn physical make-up or else that the similarities in training of twins will raise .40 to .80 in physical traits such as cephalic index, and that the similarities in training of siblings will raise the .20 only to .40 or .50. He must also place the bulk of influence of this training previous to the tenth year and assume that it is of such a generalized sort as would raise the resemblances in marking A's or words containing *r* and *e* as much as that in multiplication.

Doubtless we all feel a repugnance to assigning so little efficacy to environmental forces as the facts of this study seem to demand; but common opinion also feels a repugnance to believing that the mental resemblances of twins, however caused, are as great as the physical resemblances. Yet they are. I can not here discuss the general facts and detailed studies which bear upon the question of the amount of influence of such likenesses and differences in environment as existed in the case of these twins.

I shall also spend but little time in comments upon the application of the facts so far presented to theories of education and human action and to the practical problems of social control. The inferences with respect to the enormous importance of original nature in determining the behavior and achievements of any man in comparison with his fellows of the same period of civilization and conditions of life are obvious. All theories of human life must

accept as a first principle the fact that human beings at birth differ enormously in mental capacities and that these differences are largely due to similar differences in their ancestry. All attempts to change human nature must accept as their most important condition the limits set by original nature to each individual.

We must be careful, however, not to confuse two totally different things: (1) the power of the environment,—for instance, of schools, laws, books and social ideals,—to produce differences in the relative achievements of men, and (2) the power of the environment to produce differences in absolute achievement. It has been shown that the relative differences in certain mental traits which were found in these one hundred children are due almost entirely to differences in ancestry, not in training; but this does not in the least deny that better methods of training might improve all their achievements fifty per cent. or that the absence of training, say in spelling and arithmetic, might decrease the corresponding achievements to zero. Similarly, the fact that Mr. Rockefeller has amassed one of the great fortunes of the age is undoubtedly due almost exclusively to his original capacity, not to circumstances; but this does not deny that it is almost exclusively circumstances which make the average wealth of men to-day greater than it was a thousand years ago or that future changes in the environment might, without any change in capacity, make nine men out of ten the owners of automobiles, race-horses, tall hats and the other blessings of wealth.

The argument has been limited entirely to the causes which make one person differ from another in mental achievements *under the same general conditions of life at the beginning of the twentieth century in New York City as pupils in its school system*. If the resemblance of twins had been measured in the case of a group made up partly of New York City school children and partly of children of equal capacity brought up in the wilds of Africa, the variability of the group in addition and multiplication would have increased and the correlation coefficients would rise. They would then measure the influence of original nature plus the now much-increased influence of the environment.

The relative impotence of such similarities of home training as existed in our fifty pairs of twins to create similarities of achievement does, however, make one suspect that the magnitude of the influence of the training given by schools, periods of civilization and the like has been exaggerated. For other reasons, also, I imagine this to be the case, but to prove or disprove it, one would need data quite different from the records of these hundred twins.

It is, then, folly to conclude that the inheritance of mental capacities from immediate ancestry implies the futility of education and

social control in general,—the wisdom of fatalism and *laissez faire*. Such studies as this merely prove the existence of and measure one determinant of human intellect and character and demonstrate that the influences of the environment are differential, the product varying not only in accord with the environmental force itself, but also in accord with the original nature upon which it operates. We may even expect that education will be doubly effective, once society recognizes the advantages given to some and denied to others by heredity. That men have different amounts of capacity does not imply any the less advantage from or need of wise investment. If it be true, for example, that the negro is by nature unintellectual and joyous, this does not imply that he may not be made more intelligent by wiser training or misanthropic and ugly-tempered by the treatment he now receives. It does mean that we should be stupid to expect the same results from him that we should from an especially intellectual race like the Jews, and that he will stand with equanimity a degree of disdain which a Celt would requite with dynamite and arson.

To the real work of man for man,—the increase of achievement through the improvement of the environment,—the influence of heredity offers no barrier. But to the popular demands from education and social reforms it does. For the common man does not much appreciate absolute happiness or absolute betterment. He does not rejoice that he and his children are healthier, happier and more supplied with noble pleasures than were his ancestors of a thousand years ago. His complaint is that he is not so well off as some of those about him; his pride is that he is above the common herd. The common man demands *relative* superiority,—to be above those of his own time and locality. If his son leads the community, he does not mind his real stupidity; to be the handsomest girl in the county is beauty enough. Social discontent comes from the knowledge or fancy that one is below others in welfare. The effort of children in school, of men in labor and of women in the home is, except as guided by the wise instincts of nature or more rarely by the wisdom of abstract thought, to rise above some one who seems higher. Thus the prizes which most men really seek are, after all, in large measure given or withheld by original nature. In the actual race of life, which is not to get ahead, but to get ahead of somebody, the chief determining factor is heredity.

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REVIEWS AND ABSTRACTS OF LITERATURE

Optical Illusions of Reversible Perspective. A Volume of Historical and Experimental Researches. J. E. WALLACE WALLIN. Princeton, N. J., 1905. Pp. 330. Published by the author.

This book deserves notice for two excellent reasons. First, it represents the most extensive foraging and collecting that has yet been done in this field. Secondly, the various chapters set forth in wisely conservative forms of statement what may probably be taken to be the best present opinion on the topics treated.

The historical part has been so thoroughly done, I should say, that a similar canvassing of the literature need never be undertaken again. This section occupies about a third of the volume. The digests, massed in five chapters under convenient descriptive headings, form a sort of reference encyclopædia with the essential cuts and diagrams reproduced. Pseudoscopy, together with the instruments involved, is given adequate treatment. The use of these pages is facilitated by rather full references to them in the general index.

The experimental portion offers no particularly revolutionary facts. The chief novelty here is one of method. Attention being given predominantly to the examination of equivocal geometrical diagrams, certain selected figures are viewed under the condition of momentary exposure, .03 sec. being approximately the time employed. In general the author has made use of the stock equivocal figures, but to these he has added a few excellent ones of his own devising. The very large number of experiments made leads to results that, when discussed in connection with existing opinion and conjecture, form a quite respectable body of doctrine. Some of the leading conclusions of the book may now be summarized. As hinted above, these conclusions are often characterized less by their novelty than by the fact that their truth seems now doubly assured.

1. Plane geometrical drawings are overwhelmingly envisaged perspective. In 4,887 exposures only two per cent. of the figures were seen flat.

2. Each figure of this variety has a 'predominant' or 'preferred' perspective. Thus the Neckar parallelopiped is seen with its top forward about four times as frequently as with its base in the foreground. Certain figures, like the pyramid and the Mach book, seem, however, to have no marked predominant.

With these facts secure, the real problems of the matter arise. What we particularly wish to know is (a) what the predetermining conditions are under which we spontaneously or voluntarily see any one of several possible perspective forms, and (b) what happens when the perceived form of perspective changes, this change being, like the original perception, either spontaneous or intentional. In other words, we wish to know what the eyes are doing and what central factors are operative in the various stages of this perception of reversibles. Indeed, an entire treatise on this subject of equivocal perception might well be outlined on the basis of these two questions. The replies found acceptable to the author are chiefly as follows:

(a) *Central factors*.—(1) Preperception plays the leading part. This may refer either to the fact that the figure is perceived in the form of the object that has been prevailing or habitually experienced, or to the fact that the form perceived is esthetically preferable. In any case this explanation must be supplemented by the hypothesis of a 'secondary disposition' to account for the occasional seeing of the non-predominant form. The author seems not disposed to deny that this central factor may be the essential precondition of an appropriate and more powerful peripheral factor.

(2) Suggestion is efficacious. Experiments were made upon school-boys from nine to sixteen years of age under the same general conditions as those used elsewhere. Whereas the ratio of the preferred to the non-predominant perspective was, for all figures used, in the case of adults 63 per cent. to 22 per cent., the percentage of non-predominants seen was here raised by suggestion to 68. The percentage of predominants seen under the influence of suggestion was 77.

(3) The will and the imagination, against which as primary factors Wundt has made such vigorous protest, are admitted by the author to play positive rôles only when other determining factors hang in the balance. Whatever the ultimate opinion about these factors, 'it seems conservative to conclude that the perspectives can never be absolutely controlled or unconditionally reversed by mere activity of will, imagination or judgment.'

(4) Practice may to a limited degree make a non-predominant more readily and frequently seen. Its effects are, however, transitory. The central nature of the effects of practice is evidenced by the fact that the unpracticed eye gives the same results as the other.

(b) *Peripheral and external factors*.—(1) Fixation. One of the fundamental theses of the book is, as the author asserts, 'that there is an *aversion motive toward the point of regard*.' However, considerable caution is displayed, as may be seen from the following statement of the matter. "On the whole, there seems to be no direct evidence against, while there is some in support of, the conclusion that 'the virtue' or efficacy of fixation consists in aversing or attracting the point or parts fixated toward the retina of the observer." This attracting of the fixated parts (again speaking cautiously) is probably to be ascribed to strain sensations and to the greater clearness secured.

It is noted that a special fixation may become markedly operative only after weeks of practice, which may, of course, be evidence merely of a very refractory predominant.

In connection with some experiments on the time required to produce a reversion voluntarily, it was found that a part directly fixated reversed two and a half times faster than when viewed in indirect vision.

Reversions that occur during a supposedly rigid fixation are due, presumably, to relaxations through fatigue of the recti muscles.

(2) To accommodation as such the author declines to ascribe any determining rôle. This opinion he bases in part upon Loeb's demonstration, confirmed by his own observations, that reversions may occur with

atropinized eyes, and in part upon the unfavorable or equivocal results of experiments to test the effect of altering the accommodation by means of lenses. Special experiments upon the general function of the accommodation in the perception of the third dimension lead to the same adverse conclusion.

(3) Binocular vision increases the number of predominants seen in certain cases and diminishes them in others. Monocular vision yields, on the whole, greater uniformity.

(4) Increasing the distance of the figure from the eye favors the seeing of the concave form of a perspective.

(5) As to illumination, the distribution of light and shade by the throwing of cast-shadows is of course highly effective. A further fact of much importance and one carefully investigated is that white lines on black tend strongly to advance into the foreground. In an attempt to equate the distances of black and white rods the average difference between them was one thirty-eighth of the standard. The superior brightness and clearness of the white is probably the determining factor.

The final chapter of the book is devoted to a recapitulation and to a comprehensive survey and discussion of theories. As the reader might readily predict, it is the psychophysical, as against the psychological, theory that is recommended as adequate to meet the case of these illusions of reversible perspective. No precise formulation of the theory is proposed, somewhat loose generalities comporting better with the present state of our knowledge.

It is a pity that a volume with the merits of this one should have certain conspicuous defects serious enough to keep it from being more generally read. To be sure, the cuts with which both the historical and the experimental sections are plentifully supplied are most excellent. But the typography is wretched, as the author himself admits and laments. And, what really furnishes the forbidding aspect of the book, occasional sections and chapters are written with inexcusable obscurity both of language and of presentation. One finds everywhere a perverse tendency toward endlessness of subdivision and toward a plethora of adjectival characterization. This, coupled with an exasperating cloudiness of style into which the author is led by the exigencies of a compensating condensation, makes the reading of the volume anything but easy. Frequent recapitulations partially redeem these defects, and the attention is occasionally caught by suggestive criticisms, side-comments and discussions.

An unusually full index closes the volume.

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Psychologie und Pathologie der Vorstellung. Beiträge zur Grundlegung der Aesthetik. RICHARD WALLASCHEK. Leipzig: Barth. 1905. Pp. x + 323.

This work purports to be a partial prolegomenon to esthetic theory; a finished prolegomenon would, the preface says, have to include further an investigation of sensation, feeling and judgment similar to the one

here made of *Vorstellung*. After reading the work, however, the reviewer can not avoid the conclusion that it is really an attempt to prove certain theories by recourse to clinical evidence. What is given is in no wise a contribution to any branch of psychology, but rather a highly interesting rearrangement of long-known material suited to lend a certain probability to one or two 'principles' of esthetics, especially to the hypothesis of the complete independence of feeling, thinking and reacting, and *a fortiori* to the theory of the fundamental identity of artistic enjoyment, secondary sensations and hypnotic states.

The non-rational character of esthetic states is held to be proved by the absolutely variable and indeterminable nature of the *Vorstellungen* induced by feelings (p. 144). There is, accordingly, no causal connection between *what* we have 'in fantasy' while we are feeling in a particular way and the character of this feeling itself. But this fact—if it be one—is nowhere clearly distinguished from the very different one that certain things induce certain sorts of feeling. The writer is constantly confusing the two, although his last word is that 'in the long run not everything can be held to be beautiful' (p. 308), thus indicating the possibility and necessity of objective esthetic science.

Another hopeless difficulty for the reader lies in the constant shifting of standpoints. At one time we are told what associations some people have with certain feelings. Then again, how one must proceed in order to produce esthetic enjoyment in others, once again—and this very commonly—the pedagogical significance of facts brought to light by pathological and normal cases of association, chromesthesia, hypnotism, etc. In one instance the insertion of a pedagogical digression is intolerable; the writer fills twenty pages with a theory of teaching piano-playing! (pp. 92 ff.). One can never tell just what the book is trying to show.

Unfortunately, the most interesting things noted have nothing to do with establishing a theory of esthetics. For instance, the origin and function of secondary sensations (pp. 187-192) and the significance of dream-types (pp. 258 ff.) are highly readable topics. The author attempts to explain all instinctive activity as an effect of secondary sensations. Speaking of cattle which avoid poisonous weeds, he says: 'If looking at or smelling of a weed induces at once secondary taste-sensations of the same kind and effect as induced by the actual eating of the weed, then we can understand the cow's abstinence' (p. 191). Quite true, the reader will say; but this view does not eliminate the problem of the origin of this strange interactivity, as Wallaschek supposes it does when he says that the whole theory of heredity can now be dispensed with! One might ask, indeed, what sort of secondary sensations account for the migratory instincts of birds, etc. The writer devotes a page and a quarter (with one illustration) to put all evolutionary biology out-of-doors! With regard to dreams, we are told that secondary sensations here gain the control of our experience (p. 258), and that absolutely all judgment is, therefore, lacking in sleep-experiences (p. 259). This latter statement can not be taken scientifically, but only in the popular sense of the word 'judgment.' The supposedly prophetic character of dreams is explained

as the working of secondary sensations which in sleep induce associations that otherwise would be swamped by voluntarily controlled attention; hence the various sorts of dreams we have are indices of certain typical experiences (p. 260). Whether Wallaschek's interpretations of special types of dream adventures are correct, the physiologist must help us to determine; at all events, they are ingenious.

The writer connects esthetic pleasure with dream-experiences, both being, as he thinks, cases of non-rational domination of secondary sensations. So, he says, it is a fundamental principle that music ought to be enjoyed just as a dream is (p. 268). The subjective freedom is what constitutes the indescribable pleasure of both dreaming and listening to music. Perhaps nowhere else does the purely individual, non-scientific character of the whole book stick out so clearly as here; in calling esthetic enjoyment 'subjectively free' in the way dreams are, the writer brings in the most harmful equivocations, inasmuch as *what* we are free from in each case is utterly different. Dreaming is abject slavery to physiological conditions (roughly speaking), whereas 'roaming in fantasy' while hearing music is a procedure most emphatically under the control of the will to no inconsiderable extent. Other equally great differences may readily be noted, too. Wallaschek, however, repeats in another connection his conviction that the effect of esthetically experienced things upon us is essentially hypnotic (p. 306). This is, of course, the consistent outcome of his absolute divorcement of emotion and thinking. The implication of all this is plainly that, whatever may induce a particular feeling, there is involved at no point an essential reference to an object; feelings can be, must be, associated independently of all association of things connected somehow with these feelings. To the psychologist and logician, it is clear that Wallaschek is once more speaking of 'objects' in the popular sense, just as he does of 'judgment.' The critic must protest, though, that even infinite (absolutely non-repeating) variation in 'associations' would never even make it probable that *no* reference to objects is implicated in esthetic feeling. Another consistent statement is that artistic genius is essentially frenzy, an absolutely pathological rendition of inner experiences (p. 297); outward self-control does not change the deepest nature of the genius's experiences at all. The difference between genius and madman lies in the possession by the former of 'normal consciousness' and in its absence in the latter. Incidentally, it might be noted that the arguments based upon statistics about the geographical distribution of the insane (p. 257) are wholly illogical. Again, incidentally, the epistemological conclusions about the character of space and time as drawn from observations of narcosis are almost humorous (p. 248).

In spite of the unfavorable impression of the work which the above notes will convey, there is, nevertheless, much to be said on the other side. The author is plainly an esthete in blood and bone, individualistic to the point of enthusiasm; yet the facts brought together here signify a vast command of literature and an exceptionally high order of expository ability. The readability of the book is unhappily out of all proportion to its scientific value. As a reference-work for beginners in psychology

it might well find approval by reason of its admirable bibliography of pathological cases and the vast number of detailed reports on such. But there is not a single statement made, not a single conjecture advanced, which gives hope of solving any of the problems which the majority of students regard as the really fundamental ones in esthetics. The work itself is an esthetic production, not a scientific one; a strange mass of perfectly true facts clustered in a way more or less irrelevant to psychological interests.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. Band 126, Heft 2, July, 1905. *Der Wandel in Schillers Weltanschauung* (pp. 113-139): H. CLASSEN. - Insufficient attention has been given to the wide divergence of Schiller's earlier, Platonic, mystic, theosophic beliefs from the introspective and humanistic doctrines that held him later. To the end his philosophy was unsettled. *Die neuen Bände der akademischen Kant-Ausgabe* (pp. 140-167): K. VORLÄNDER. - Notes on the revelations of Kant's personality in his latest letters. Sundry comments on the order and on other special features of the first four volumes of the edition. *Identität und Gleichheit mit Beiträgen zur Lehre von den Mannigfaltigkeiten* (pp. 168-188): K. GEISSLER. - From a study of the use of the terms, identity and equality in mathematics, the conclusion is drawn that it is at least doubtful whether we can for logical purposes use the terms as significant elements apart from specific contexts, their meanings varying so that we can not use the terms absolutely. *Ueber den Text der Lucasschen Biographie Spinozas* (pp. 189-208): J. FREUDENTHAL. - The editor replies to v. Dunin-Borkowski's criticisms. *Recenzionen* (pp. 209-226): Guido Villa, *Einleitung in die Psychologie der Gegenwart*: STÖRRING. D. Hume, *Eine Untersuchung über die menschliche Vernunft*. Deutsch von C. Nathanson: H. BROMSE. J. Freudenthal, *Spinoza, Sein Leben und seine Lehre*: LÜLMANN. J. Baumann, *Deutsche und ausserdeutsche Philosophie der letzten Jahrzehnte dargestellt und beurteilt*: K. VORLÄNDER. L. Goldstein, *Moses Mendelssohn und die deutsche Ästhetik*: A. TUMARKIN. *Entgegnung. Selbstanzeige, Notizen. Neu eingegangene Schriften*. Aus Zeitschriften.

Le Bon. *L'Evolution de la matiere*. Paris: Flammarion.

Mach, Ernst. *Erkenntnis und Irrtum*. Leipzig: Barth. 1905. ix + 461 pp. 10 M.

Porena, Manfredo. *Che cos è il bello?* Milan: Ulrico Hoepli. 1905. 482 pp. 6.50 L.

Walter, J. et al. *Zur Erinnerung an Immanuel Kant*. Halle: des Waisenhauses. 1904. 374 pp.

Wiechowski, K. *Die Unterbrechung des Kausalzusammenhanges*. Breslau: Schletter. 8vo. 1.70 m.

Windelband, W. *Die Philosophie im Beginn des 20 Jahrh. s. I. Bd.* Heidelberg: Winter. 1904. 8vo. 5 m.

Wundt, W. *Völkerpsychologie: Eine Untersuchung der Entwicklungsgesetze von Sprache, Mythos und Sitte. I. Bd.: Die Sprache. Heft 2., umgearb. Aufl.* Leipzig: Engelmann. 1904. 673 pp. 14 m.

NOTES AND NEWS

MACH's famous book on mechanics has reached its fifth edition. Especial attention is paid to recent statements of the law of inertia, and, in view of the French translation of his book, the author has taken account of modern tendencies in France. It is of interest that many French writers, independently, or influenced by Mach only indirectly, have come to occupy very similar positions, as for example Poincaré and Duhem.

THERE has appeared a third edition of Dr. Richard Dedekind's pamphlet on 'Stetigkeit und irrationale Zahlen.' The essay had its origin about 1858, when the author undertook to lecture on the calculus. Finding no satisfactory treatment of the concept of continuity in existence, he was forced to produce one of his own. Dedekind discovered his own definition on November 24, 1858, and the present pamphlet was written in 1872 in commemoration of his father's jubilee.

F. H. THIELE (*Journal of Physiology*, July 13, 1905) has discovered in the posterior region of the optic thalamus centers which he believes control the coordinated movements of walking. G. Pagano (*Arch. Ital. de Biol.*, May 10, 1905), experimenting on dogs, has been able to map out distinct areas in the cerebellum and show their relation to movements of definite parts of the body. The motor centers of the cerebellum are more deeply situated than those of the cerebrum.

THE present interest in the empirical standpoint appears in the title, 'Bibliothèque de Philosophie Expérimentale,' a series of volumes promised by the *Revue de Philosophie*. Among the titles announced may be mentioned: 'Les fondements métaphysiques des sciences,' by J. Bulliot, 'Les géométries non euclidiennes' by L. Delaporte, and 'La théorie physique, son objet et sa structure' by P. Duhem.

PROFESSOR EUGENE W. LYMAN, of the Congregational College of Canada, Montreal, has been appointed professor of philosophy and theology in the Bangor Theological Seminary, Bangor, Maine.

PROFESSOR E. RAY LANKESTER, director of the British Museum of Natural History, was elected president of the British Association for 1906, at the final meeting of the association held at Johannesburg, on September 1.

PROFESSOR ALEX B. COFFEY, of the University of Wisconsin, has been chosen to succeed Dr. Payne in the department of philosophy and education at the College of William and Mary.

DR. J. W. HICKSON has been appointed assistant professor of psychology and lecturer in philosophy at McGill University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

AN EMPIRICAL DEFINITION OF CONSCIOUSNESS

ONE of the most interesting bits of theory which Avenarius has developed is his explanation of idealism. He regards it as the last shred of that primitive animism which once controlled human imagination and experience. Animism yielded the idea of soul and the idea of God, and the soul idea after transformation into the concepts of thinking substance, monad, transcendental unity of apperception and Fichtean ego, yielded, in conjunction with the idea of God, that reassuring idealism—which seemed for a time to be the final word of philosophy.

The natural science of to-day, however, finds the world a very different sort of object from what it must have been in the animistic experience of our forefathers. Yet our experience has come into existence by virtue of an evolution from theirs, an evolution without gaps. In this process experience has become less and less animistic, until only our fellow men and the higher animals remain in the old category which once embraced, we may presume, in one fashion or another, a large part of nature.

Avenarius thus seeks to formulate the concept of a history of experience in which animism is progressively purged away, and it was his conviction that when the process of purgation should be completed idealism would have ceased to exist.

Those upon whom this line of thought had made any impression must have been particularly struck by the recent articles of Professor James on consciousness, for there can be hardly any doubt that consciousness, as Professor James put it, is 'the faint rumor left behind by the disappearing soul upon the air of philosophy.' Already in his '*Kritik der Reinen Erfahrung*'¹ (1888), Avenarius expressed his suspicion of the term consciousness, and in '*Der Menschliche Weltbegriff*'² (1891), he says, 'Am besten wärs man gäbe einen so verfänglichen Ausdruck ganz auf.' If, then, in

¹ Vol. I., p. viii and p. 22.

² P. 132, note 67.

dropping the metaphysical concept of consciousness we get rid of animism, it is natural to ask whether, at the same time, we bid farewell to idealism. For idealism, like any other theory, must find its data in the human experience of to-day, and if a frank and empirical description of this experience does not yield the traditional concept of consciousness, we must inquire what it does yield, and whether this suffices for the needs of idealism. Accordingly, the first part of the task seems to be an empirical definition of consciousness.

I

At the outset I can but refer to certain recent articles which seek to improve our empirical accounts of perception and knowledge.³ My own effort is in the spirit of the writers I refer to, and especially have I felt encouraged by the articles of Professor James.

Professor James explains at the outset that he does not deny the existence of everything we may suitably call consciousness. The function of knowing is not to be denied, and for this function the name consciousness can be retained. He does deny the existence of any 'entity' or 'aboriginal stuff or quality of being contrasted with that of which material objects are made, out of which our thoughts of them are made.'⁴ Now it is a merely verbal matter, but for my own present purpose, I am going to call this function of knowing simply knowing or knowledge, and I am going to use the word consciousness to signify another fact or group of facts equally real. It is for the reader to decide whether my use is justified.

As creatures of habit we say that there are things and there is awareness of things, that there are objects and that there is consciousness of objects. Any fact to which I attend becomes straightway an object, and every object, we say, must have a subject. This subject can not be my body, for that is another object. The subject must be something far more subtle, namely, consciousness. 'Must be,' we say, not 'is.' The sincere empiricist may well be suspicious of 'must-bes.' His first business is to see what the empirical situation contains, not what a definition implies. In what follows I try to report a strictly empirical content, leaving out all 'must-bes.'

It sounds like an innocent and an intelligible proposition to say that I see the chair on the other side of the room. If, however, I mean that an inspection of the situation as experienced reveals any detail of the content that can be called 'seeing' as distinct from the visual chair, and other objects in the shape of sensations of head,

³ Professor William James in this JOURNAL, Vol. I., Nos. 18, 20, 21; Vol. II., No. 2. Professor Frederick J. E. Woodbridge, in the same JOURNAL, Vol. II., No. 5. Ralph Barton Perry, in *The Psychological Review* for July, 1904.

⁴ JOURNAL OF PHIL., PSY. AND SCI. METHODS, Vol. I., p. 478.

throat and body, this commonplace statement is false. The situation contains not seeing, but visual and other objects, and if I am interested in the object on the other side of the room in such a way as to make me oblivious of myself, the situation as just then experienced by me contains no seer.

It is easy to understand, however, why we say 'I see the chair' and think we have a feeling of doing something. Owing to acts of mine, the content is constantly changing, I am continually doing things in order that particular contents may exist, as when I travel and take great pains to see all the picture-galleries, or all the Gothic architecture that I can. And when I at last have come to something that I have long and eagerly wished to see, there may be such a lively pleasure and such a sense of purpose fulfilled that I say to myself: 'Now you are beholding it, now you have really got the experience you have been longing for.' In these cases an empirical ego is present, but it is another object in the field of experience.

This sense of personal efficiency expresses itself in a sentence having its subject in the first person and a verb in the active voice and, in the example used, the visual object in the accusative case. And now applying this manner of words to the simple case of 'seeing' the chair, we get what seems to me a very bad piece of psychology. The situation may contain ego elements and non-ego elements, but these are all objects within the content; and anything like a sense of effort or strain which might be called a feeling of the act of perception is simply another object which would be grouped among the ego elements. But in most normal cases (introspection is an abnormal case) there is simply the presence of the thing 'perceived.' When I look up there is the chair, and that seems to be the whole story. The chair is there before me, but I can discover no consciousness of it. The sound of the electric car is out there in the street, but there is no consciousness of it. There is the odor from a lamp, but consciousness of the odor does not accompany it.

The field of experience contains objects of endless variety,—trees, buildings, sensations, pains, pleasures, hopes, fears, mathematical relations and logical necessities. But in no case of knowledge does an empirical inspection discover the object plus consciousness of it. If we mean, then, by consciousness something observable over and above the brute fact that the object is there wherever it is, we certainly mean what no observation can discover. It may strengthen this conviction to reflect that the idea of consciousness is probably the attenuated soul idea. We speak of states of consciousness; our psychologizing forefathers spoke of states of the soul and meant the same thing.

It does not seem to me, however, that we should regard conscious-

ness as a bad word. We can continue to use it to mean what we have really always meant by it, namely, what is essentially private to one observer. That there is a great mass of experience which is essentially private and is thus contrasted with what is public is the basis of the familiar distinction between the inner and the outer world. Private objects are what we may intelligibly call subjective facts. For an object to be subjective is for it to be private. Now by any case of consciousness we mean what is equivalent to a mental state, and 'the fact that our mental states are incapable of observation by anybody but ourselves seems to be not an accidental but an essential character of these mental states.'⁵

After the statement of purpose given above, it may seem peculiar that I should select as a definition of consciousness precisely that used by one of the most distinguished living idealists, and which in his hands is made to exhibit the implications of an all-inclusive absolute self. And I must acknowledge that it is from his pages I take the definition. I do so the more confidently as it is the one accepted by Professor Münsterberg, who writes: "The most general condition which characterizes a psychical fact is that it can be experienced by only one, and that as object it stands to the subject in the relation of mere capacity to be experienced (*Erfahrbarkeit*); it is distinguished from physical facts by the circumstance that these can be experienced by more than one. . . ."⁶

The privacy character is, I think, not really different from the one advanced by Dr. Perry in his article, 'Conceptions and Misconceptions of Consciousness.'⁷ The earlier judgment, which is pronounced error by a later one, is thereby viewed as idiosyncrasy or confusion. Such rejected convictions are 'definitely recognized as my experience.'⁸ "There is no experience of which one may not come to say 'it is my state or it is your state.'⁹ "The most unequivocal instance is the dream."¹⁰

So long as we keep within the limits of the experience of one mind, this seems to me a very adequate account of the matter, but the judgments with which scientists as such are concerned are judgments in which they have a common interest, and in which validity means the support of corroborative agreement. In the case of the single mind, the earlier judgment loses validity as soon as it loses

⁵ Royce, 'Outlines of Psychology,' p. 4.

⁶ "Grundzüge der Psychologie," p. 202. See also 'Psychology and Life,' p. 46.

⁷ *Psychological Review* for July, 1904, pp. 285-7.

⁸ Dr. Perry's article, p. 284.

⁹ *L. c.*, p. 289.

¹⁰ *L. c.*, p. 287.

verification by subsequent judgments. The individual who can not obtain the assent of other observers finds his judgment classified as idiosyncrasy.

It seems to me a very misleading analysis which does not take into account the necessity of verification by other minds, at least, if we mean to be empirical, and if we are discussing that type of judgment which is a judgment in science. Now that cognitive experience which for itself is rational and full of insight, yet which a later judgment of the same mind, or a judgment of another mind, characterizes as whimsical, is what the criticizing mind can not get hold of and make its own. It remains the private experience of another, a mental state, a state of consciousness. The experience that is 'definitely recognized as *my experience*' and presents a 'for-me relation,' and is best illustrated by the case of a dream, is so manifestly characterized by its essential privacy and limitation to one observer, that Dr. Perry's excellent account can lose nothing by accepting privacy as the characteristic property of consciousness rather than idiosyncrasy and error, and idiosyncrasy appears naturally as privacy as soon as other minds are taken into account. And error, in science, is the fact of rejection by other observers. What is rejected is the decision of a cognitive experience, and it is rejected simply because it is not shared, for if it were shared it would be not rejected, but affirmed.

In what I said above about the great variety of objects and the universal absence of any type of object that can be called consciousness of them, I find myself in substantial agreement with Professor Woodbridge,¹¹ and I can not see that I really differ from him in proposing to use the word consciousness in a different sense.

Professor Woodbridge expresses greater confidence in saying what consciousness is not than in saying what it is. It is not 'a kind of receptacle' into which things can get. It is not, as the idealist believes, the stuff and matter of all reality. But we can say that things exist in consciousness and express an intelligible and consistent meaning. When things exist in consciousness a new 'type of connection' is established between them. They are 'connected up in a new way.'¹² "The peculiar way in which consciousness connects the objects in it is thus the way of knowledge actual or possible."¹³ "This peculiar form of connection . . . simply makes them known or knowable, and known with all their variety of distinctions from a thing to a thought."¹⁴ And there is 'apparently abundant right to con-

¹¹ 'The Nature of Consciousness,' this JOURNAL, Vol. II., No. 5.

¹² *L. c.*, p. 125.

¹³ *L. c.*, p. 122.

¹⁴ *L. c.*, p. 122.

clude that when consciousness exists, a world hitherto unknown has become known."¹⁵

Now, I do not see why, in the sentences I have quoted, the words knowledge or knowing or cognition could not be substituted for the word consciousness, and express even more clearly what is meant. Of course in view of the fact that the article expresses a greater confidence in its negations than in its positive affirmations, I do not wish to interpret these with undue assurance, but the meaning, I take it, is that when consciousness occurs real objects become known, and the only difference it makes to the objects is that they are related in ways to which they themselves are indifferent, but which constitute knowledge. These relations are relations of mutual implication.

With all the negations of Professor Woodbridge I entirely agree, and I can not see that any of these suffer from substituting the word knowledge for the word consciousness. The question whether consciousness exists is simply the question whether these cognitive relations exist, and the suggestions of Professor Woodbridge toward a definition of consciousness really seem to me to have in view a definition of knowledge.

Professor Woodbridge recognizes as 'an important aspect of consciousness,' the 'isolation' of the 'individual consciousness.'¹⁶ It seems to me that he would simplify the statement of his own position and certainly admit nothing inconsistent with that position by accepting the criterion of privacy and isolation as giving the essential property of consciousness.

There is an evident reason why many will object to defining consciousness as private objects. Such a definition does seem to make a cleavage in experience, and the monistic sentiment which dislikes the dualism of thought and thing will naturally dislike the division into public and private objects. Such an objection, however, comes from the metaphysical imagination, which can hardly be permitted to interfere with an inspection of concrete experiences. In the present case we have only to decide whether there are objects that may be suitably grouped together under the term 'consciousness,' and what is their common characteristic. Experience contains objects not accidentally but essentially private, and it contains objects essentially public (I simply report the empirical situation which may be as illusory as you like), and whether this division is important or not, it is empirically actual.

I shall, accordingly, use the word consciousness to mean experience that is essentially the private and unsharable experience of one person, and I shall conceive such experience, which for each one of us

¹⁵ *L. c.*, p. 125.

¹⁶ *L. c.*, p. 121.

is a certain streaming of objects of the private type, as contrasted with objects that are public, and directly observable by any one so far as their own nature is concerned. This is the ordinary antithesis of subjective and objective, mind and nature, 'Bewusstsein and Natursein.'¹⁷ We have the two kinds of objects; the distinction is commonplace, but strictly empirical.

Let us now see whether this return to the ungarbled facts of experience has any consequences for transcendental idealism. My purpose is precisely that of Dr. Perry in the article I have referred to, namely, to deal logically with the idealistic theory of an absolute. The success of Dr. Perry's criticism depends, it seems to me, on the obligation which the idealist may be under to accept Dr. Perry's definition of consciousness. It does not seem to me that the idealist is obliged to accept this definition, but, as I have above remarked, all the intentions of this definition seem to me better carried out when we say that consciousness is private experience, and the idealist certainly would not deny that he conceives all objects as mental states and that these are, as such, essentially private and exclusive.

The word consciousness is so wrapped up with idealistic implications that it seems to me most desirable to get rid of the phrase 'objects exist in consciousness.' Consciousness is subjective, individual and private, and if we intend to give an accurate description of the empirical situation, it is wise to cease using phrases that have us ensnared before we know it in a metaphysical tradition. To come back to the chair, the actual test whether my visual object be chair or hallucination would be to find out whether you too see what I do. Meaning, then, by consciousness the kind of objects that are private and exclusive, there is no motive whatever for saying the chair exists 'in consciousness.' It exists in the room, in space, in time (although here, I think, we begin to use metaphors), it exists in the system of relations that constitutes knowledge of it, and the terms supporting these relations are objects of the public type.

From the point of view, then, of an accurate description of the empirical situation, I have no ground for claiming the chair as my private object, which it must be if it is a mental state or a case of consciousness. If the privacy of consciousness nowhere comes into play that identical chair can be your object and my object, by which we mean that you, I and the chair are all objects in one situation.

But if the above reasoning is sound, how fares it with the logic of idealism?

When the argument for idealism can be stated in so many ways it may seem futile perhaps to pick out one. The one I give is not the same as that quoted by Dr. Perry. I give the following argu-

¹⁷ Münsterberg, 'Grundzüge,' p. 204.

ment because it has always seemed to me the best one, and because it is usually ignored by critics.

It begins by explaining that specific sense-qualities exist only by virtue of the functional activity of the perceiving subject, and that it is impossible to describe or conceive an object in other terms than those of consciousness, and that consequently to assume the existence of an object having other attributes is to assume nothing. And to assume that the object exists as consciousness is to define it as what is the private experience of one observer. When all experience and all objects of experience are defined as consciousness, no common object is possible. It is impossible that a father and a mother could refer to their child and each refer to the same object. Different selves are completely sundered existences.

Now this flies in the face of normal experience, but it is perfectly logical, granting the premises. The argument proceeds: different selves can not come together in any way or have any common objects. Two selves, therefore, can not occupy the same universe. And if we are to claim to live together at all in the same universe, this universe must be the total consciousness of one self, which integrates and absorbs all our various individual selves. My world and your world are the same because we are of it, and it is the consciousness of one self. Now, since we do all the time claim to have objects in common, we appeal continually to a situation which, when examined, shows that every concrete human life is a fragment of an absolute consciousness.

To think of shattering such a work of art! It is like looting a temple. And yet, if the chair before me is not of the essentially private portion of experience, this grand and really spiritual fabric of the imagination dissolves away like the architecture of dreams.

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AN APPARENT CONTRADICTION IN THE MODERN THEORY OF JUDGMENT

THERE may be said to be two fundamental postulates that are combined in every theory of the judgment now generally current. One is that judgment is the process by which mental states acquire meaning or truth, and the second that judgment is made up of two members, subject and predicate, with the implication that the judgment in some essential way deals with the relation between them. The first statement is, of course, common in slightly different forms to the more modern English-speaking logicians, and in a slightly

modified form in Brentano, while the second comes by tradition from the formal logic. Nearly all of the men who have written recently would combine the two phases of definition in one and would assert that the predicate adds meaning to the subject, or, in Dewey's words, that the predicate qualifies the given in the subject.

It seems to the writer very doubtful whether the two partial definitions can be combined in this way, whether it is possible to say that the subject is at the moment of speaking the meaningless or unqualified, even if we accept, as seems necessary, the first part of the definition.

The most important assumption at the basis of the usual theory is that there is a possibility of having something in consciousness which is unqualified, meaningless, which is not reacted upon as either true or false, but merely exists. If we grant this assumption it would be possible that the unassimilated might constitute the subject of the judgment, but it would, of course still be possible that the subject was also in a measure already meaningful and that the unmeaning has another function. It seems easy, I think, to cast grave doubt upon the existence of the unmeaning in consciousness, and still easier to show that the subject is not this unmeaning even if it exists.

If we consider any single concrete psychological discussion of any event in consciousness, we find that practically no modern psychologist would hold that the unassimilated, the unassociated, is anything more than an abstraction. Bare sensation was a favorite phrase in the earlier psychological writings, but bare sensation which is not in some way worked up into perception, memory-image or imagination has gradually been driven backward to the first experience, and so by the method of limits placed outside of consciousness altogether. As a stage of perception the bare entering sensation which is afterwards to be worked up into perception, and so taken into consciousness, has become a more and more transitory stage in the process, until to-day the favorite method of treatment has been to regard it as a methodological abstraction rather than a real existence.

That the unmeaning and the bare sensation must be identical or, to put it positively, that the real psychological process and the meaningful, qualified events of logic are the same, must, I think, be apparent to any one who carefully studies the implications of the recent discussions in the two fields. On the psychological side writer after writer has recently been adopting the view that each perception must in some way be connected with much, if not all, of experience. We can not have the simplest perception without having involved in it much more than the present elements of sense. Memory images must come up to supplement it, many experiences must be effective in con-

trolling the course of the associations. The simplest concrete mental process must, in order to exist, have connections and relations with all experience, past and present. If it stands isolated it is not really conscious; to become an experience it must enter into relations.

On the other hand, to acquire meaning can be nothing else than to enter into relations with other parts of experience. To refer to something other than it is, to be qualified, to be true or false, can be nothing else than to have a place among other experiences, can come only from the interactions and mental connections of knowledge. At the instant any object takes its place in consciousness it acquires meaning, is qualified, is judged as true or false, and before that it can not come into consciousness. The intermediate stage between nothingness or unconsciousness and meaningful, significant consciousness seems to have no real existence. The partly conscious or sub-conscious does not exist in isolation, but is merely something which exists as a subordinate part of some other whole. That it exists at all can be proven only by inference or by comparing two total conscious states and observing that, as a whole, they are different in some small degree. Even the so-called subconscious elements have existence and are known only in connection, and can not be denied meaning in so far as they do enter into these connections.

Meaning and consciousness, then, seem to be coextensive. There is nowhere in mind any element which exists in isolation. Every process, if it is to be conscious, must enter into relations and thereby acquire meaning. A bare datum, an unqualified 'that' does not offer itself for observation.

A reader of Bradley and, less definitely, of Bosanquet seems to find an explanation of their belief in a mere given in their starting-point in the psychology of Mill. They found the psychology of Mill unsatisfactory as a basis for their logic, yet apparently they could not entirely discard it. They seem to have avoided their dilemma by accepting it as a true description of mental states and then building up a new mind more in harmony with the truth which they dubbed 'the universe of knowledge.' All meaning and relation found their place in the latter; in the former they would have unrelated elements. Their treatment of Mill is strongly suggestive of the changes wrought by conquerors in the theology of their subjects. The gods of the fallen peoples are retained in the religion of the conquerors, but are reduced to devils.

The tendency in modern psychology is to make the concrete mind very similar to the world of universals and to banish entirely the atomic disconnected elements of Mill. With this, too, must go the definition of judgment as the transformation of a 'that' into a 'what,' or, at least, we are now compelled to state that it becomes conscious

only as a 'what.' The first stage can have meaning alone in a physiological or physical sense, not as a real stage in knowledge.

But, even if we assume, for the sake of argument, that the meaningless given may exist in consciousness, it is, I think, fairly evident that the meaningless is not the subject of the judgment of formal logic. This may perhaps be made to stand out most clearly if we consider first the so-called undeveloped judgments, the interjectional judgment, the impersonal judgment and, in less degree, the demonstrative judgment. In the interjection the definition fits perfectly. In 'fire' or 'wolf' there is mere becoming aware of an object or situation, and the expression of the awareness in speech. The object or situation is appreciated, thereby becomes part of consciousness and takes on meaning. In the impersonal judgment we have the same psychological content formulated in a different grammatical way. The heat or the rain strikes our attention and we have the simple unrelated expression in 'it is warm,' or 'it rains.' But warm and rain are the only words which seem to have real psychological content. In the demonstrative judgment there is some slight addition; a spatial characteristic is added to the purely qualitative one, but the two characters are still largely fused instead of having separate significance.

When we approach the simple judgment of perception the definition can not be made to hold with any amount of stretching. Here, psychologically, there are two meanings to be ascribed to the same object, and the two are sufficiently distinct to make it essential that each be expressed separately. The subject is not, as is ordinarily stated, a mere unmeaning given, but is itself meaningful before the predicate is affixed. Ordinarily the delimitation which it makes is as important and distinctive as that involved in the predicate. This becomes fairly evident from the fact that subject and predicate are interchangeable in practically every case. 'That green is a tree,' 'That tree is green' are equally good judgments, and each might be the one used under different conditions. Which is subject and which predicate depends upon what the purpose of the moment may be. In the same way in Dewey's favorite illustration of the hunter and the moving thing in the bush, 'that moving (thing) is a deer,' is no more a judgment than 'that deer is moving,' although, of course, each judgment would be called out by a different set of circumstances. Both ascribe reality or meaning to the given, but the given itself does not come to consciousness before meaning has attached. And the subject is as meaningful as the predicate. The difference is rather in the *order* in which the aspects or phases come to consciousness than in the amount of meaning that is involved. The only essential difference is that the predicate expresses an aspect that is important

at the moment of speaking, while the meaning in the subject may have been ascribed at a more or less remote period in the past. It may even be that the subject is not represented very clearly in the mental content of the moment, but is added to comply with a grammatical form; yet, nevertheless, so far as it has psychological content it is on the same level as the predicate.

If, then, there be no mere given, and, in any case, the subject is, or may be, just as meaningful as the predicate, we are left with our original dilemma. Either we can define judgment as it is defined ordinarily by modern writers, as the ascription of meaning to the given, or we can retain the denotation of formal logic and make it the psychological process at the basis of the two-term proposition, but we can not do both. On psychological grounds it seems more satisfactory to hold to the definition and give up the ordinary denotation. The interjectional or impersonal judgment would then become typical, and we should be compelled to recognize two judgments instead of one in the ordinary proposition.

The problem would at once become insistent of giving the proposition a place in our logical schema. The most obvious term to apply here would be inference. This suggestion will seem to be less at variance with current usage than at first sight if we examine the different attempts that have been made to give the term content by the more modern writers, and call attention to the gradual tendency to reduce the syllogism to a much simpler form. Both Bradley and Bosanquet make inference shade very closely into the simple judgment, and neither, by their definitions nor by the typical processes that they make inference denote, is it easy to draw a sharp line between the two. Bradley would even bring recognition and comparison, which psychologically are undoubtedly simple mental acts, under the term. On the other hand, since Brown there has been a growing skepticism as to the conscious representatives of the major and minor premises, and recently Angell states definitely that the conclusion is the only part of the process that is necessarily and usually in mind when an inference is drawn. Without going exhaustively into this matter which lies beyond the immediate scope of the present paper, it seems very possible that the proposition is the spoken correlate of the typical inference, as the term is the verbal counterpart of the judgment.

On the psychological side the act of attention would correspond to judgment in logic, and the association between two simple attentive acts would be the counterpart of inference. Each science must, of course, answer its special questions with reference to these structural elements, but it is not necessary to hunt for new and strange forms to satisfy the logical needs.

Whether the change in nomenclature be in any wise desirable or not is a matter of minor importance, but it seems to the writer essential for clearness, both in logic and in psychology, that we begin to recognize that there is an absolute incompatibility between the generally accepted definition of the judgment and its all but universal denotation.

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DISCUSSION

OF WHAT SORT IS COGNITIVE EXPERIENCE?

PROFESSOR DEWEY'S recent article in this JOURNAL¹ has definitely contributed to a clearer understanding of what the term 'real' means to many advocates of immediate empiricism and pragmatism. The real is simply *that* which is experienced and *as* it is experienced. It would seem that there could be little further misunderstanding on that point. The challenge to the pragmatist to tell what he means by reality appears, thus, to have been met successfully. If it were necessary to lend external authority to Professor Dewey's exposition, one might cite the ancient statement of Aristotle that reality is whatever can be the subject of investigation. From such a definition of reality it is evident that reals may differ from one another in any way in which they are found to differ; and that, consequently, there may be 'true' reals and 'false' reals if warrant can be found for such a distinction among the things which may be investigated.

There is no need of an elaborate proof to show that this definition, in spite of—rather, just because of—its simplicity and obviousness, is the only fruitful definition of reality. The history of thought is in evidence. To the metaphysician it is a real blessing, for it frees him from the trivial question whether there is anything real at all, and turns him to the more fruitful and important question, what is the nature of the real, when is it most fittingly and appropriately defined?

Now, it is just that question which seems to cause confusion and dilemma. And it is here that further clarification is needed. For the natural and obvious answer to the question when is reality most fittingly and appropriately defined, seems to be this: when it is *truly* defined. That this answer is the cause of the greater part of current controversies about pragmatism is obvious enough. It seems worth

¹ 'The Postulate of Immediate Empiricism,' Vol. 11., No. 15, p. 393.

while, therefore, to say something about it, and elicit, possibly, further discussion from Professor Dewey and others.

The dilemma in question is apparent. If reality as true is but one sort of reality or one sort of experience, how can it possibly be affirmed that the nature of reality is most fittingly defined, when we have that sort, when, that is, reality is experienced as true? The answer occasionally given that it is thus most fittingly defined because defined in a way which most usefully meets the needs which raise the demand for definition, seems to many minds to be unsatisfactory. The reasons for dissatisfaction vary much, from quaking fear for the possible loss of an absolute to a genuine conviction that the whole knowing experience is a transcendent kind of experience, related to all other kinds in a way in which they are not related to it. I willingly leave the absolutist to his fears, but would say something in favor of the transcendence of knowledge.

As what I have to say has been definitely shaped in its formulation by Professor Dewey's article, I use some of his expressions to bring out the point I would raise for discussion:

"In each case," says Professor Dewey, "the nub of the question is, *what sort of experience* is meant or indicated: a concrete and determinate experience, varying, when it varies, in specific real elements, and agreeing, when it agrees, in specific real elements, so that we have a contrast, not between *a* Reality, and various approximations to, or phenomenal representations of, Reality, but between different reals of experience. And the reader is begged to bear in mind that from this standpoint, when 'an experience' or 'some sort of experience' is referred to, 'some thing' or 'some sort of thing' is always meant.

"Now, this statement that things are what they are experienced to be is usually translated into the statement that things (or, ultimately, Reality, Being) *are* only and just what they are *known* to be, or that things are, or Reality *is*, what it is for a conscious knower—whether the knower be conceived primarily as a perceiver or as a thinker being a further and secondary question. This is the root-paralogism of all idealisms, whether subjective or objective, psychological or epistemological. By our postulate, things are what they are experienced to be; and, unless knowing is the sole and only genuine mode of experiencing, it is fallacious to say that Reality is just and exclusively what it is or would be to an all-competent all-knower; or even that it *is*, relatively and piecemeal, what it is to a finite and partial knower. Or, put more positively, knowing is one mode of experiencing, and the primary philosophic demand (from the standpoint of immediatism) is to find out *what* sort of an experience

knowing is—or, concretely how things are experienced when they are experienced *as known things*.”

Again, Professor Dewey says in a foot-note, “The adequacy of any particular account [of the truth-experience] is not a matter to be settled by general reasoning, but by finding out what sort of an experience the truth-experience *actually* is.” I have italicized the word ‘actually.’

Now, my difficulty in getting a clear understanding of these and similar statements gets sharply pointed in the question: In what sort of experience do I find out what any sort of experience is, and is *actually* or otherwise? Is the answer to that question this: In the sort of experience you are having at the time? If so, I find out what sort of an experience a moral experience is by having it, and what sort a cognitive experience is by having it. But how shall I distinguish a moral experience from one that is cognitive? By having, I suppose the answer would run, a new experience in which the two are experienced as different.

Such an answer—and let it be kept in mind that I am not burdening anybody with such an answer, but am using it as one which seems to be implied in the statement under consideration—deserves to be pushed to its full limit in order to get a clear view of the sort of experience which it indicates. So pushed it appears to me to be this: If I am to find out what the different sorts of experience are, how they are related to one another, how they are distinguished, what sorts of objects constitute them, what has been their history, what their promise is, which of them may be called true, and which false, I must have an experience in which what I desire to find out is to some extent, at least, experienced. But this desired experience, which would contain within it all the possible riches of science and philosophy, is just the sort of experience which is generally called a cognitive experience. If, therefore, the suggested answer is the correct one, it appears to me clear that in cognitive experience all other sorts of experience may exist without alteration; for, otherwise, how could we find out what sort they are? How could they be identified as the concrete, particular sorts of experience indicated? In other words, in the cognitive sort of experience all other sorts appear to be transcended. The nub of the *question*, to use Professor Dewey’s words once more, is, undoubtedly, what sort of experience is meant or indicated. But it would appear that this question can be *answered* only in a cognitive experience!

As I have said, I burden no one with the answer which appears inevitably to lead to this conclusion. Yet I willingly take the burden myself. While I do not like the word ‘experience’ as an ultimate term in metaphysics, I can find little objection to it when it is

used as equivalent to 'some thing' or 'some sort of thing,' when 'thing' may be, apparently, any term or any relation. Thus using the word, I can readily assent to such expressions as this: There are many sorts of experience of which the cognitive sort is only one and one which can be confused with the others only to the detriment of all. But I must now add that the cognitive experience is of such a 'sort' that it enables us to tell what the others *actually* are when we ask the question about *their* sort. This question may not be asked and may not be answered. In that case no one sort of experience is identified or distinguished. And what sort of an experience would that be if not precisely what we should mean by an unconscious experience?²

I do not know whether those philosophers who bear by choice or by imputation the name of pragmatists deny, as a rule, the transcendence of the cognitive experience as here defined. When it is denied, I see no alternative but to assert that in the cognitive experience all other experiences become altered. But if we must have cognitive experience in order to have science and philosophy, and cognitive experience alters things, why then it appears to me that science and philosophy will be hugged to the bosom of the absolute idealist as his legitimate offspring!

In the endeavor to escape from the barren consequences of the position that *all* experience is in its nature cognitive and cognitive only, or, in other words, that all *things* are 'states of consciousness,' there appears danger of running to the opposite extreme. That is why, as it seems to me, the revolt against absolutism fails to convince many who are by no means absolutists. We attempt to give an account of experience which will commend itself to thought. How can we succeed if we raise the suspicion that any account of experience for thought must necessarily be, not only partial and inadequate, but radically different from what experience is? Surely here is a point where discussion can not fail to be important and profitable.

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REVIEWS AND ABSTRACTS OF LITERATURE

Die Probleme der Geschichtsphilosophie: Eine erkenntnistheoretische Studie. GEORG SIMMEL. Second, completely revised edition. Leipzig, Duncker & Humblot. 1905. Pp. x + 169.

This meaty little book is a second edition only in name; its content and standpoint are utterly new. Historical realism, as the naïve belief that

² That, I may remark, is why I dislike the word 'experience.' 'Unconscious experience' looks so like a contradiction.

human records of the past show a 'one-to-one correspondence' to facts 'as they really were,' is refuted with all the weapons of a sociologist, psychologist and metaphysician. The intensely pragmatistical standpoint taken together with the most penetrating exposé of the limits of humanistic absolutism make the book very useful to all those who are interested in the growth of the new philosophy. Its chief usefulness, however, lies in the warnings and good advice it gives to students of historical problems in general, although this very utility is seriously hampered by over-condensation and extreme abstractness.

There are three chapters, all excellent; the first gives 'the inner conditions of historical research,' the second 'the historical laws,' and the last 'the meaning of history.' I append a very brief outline of each.

Chap. I: not only is historical knowledge known *by* a subject, but it is knowledge of subjects, minds, personalities. This marks it off from all 'natural' sciences and mathematics, which deal with generalities. The first inner condition under which history is possible is that there are such unique persons 'back of' events. The second condition is that these persons have an individual lawfulness which can be studied just as well as physical lawfulness can be. Another condition is that social groups are likewise lawful unities in some sense, another that one person's state of mind, representations, feelings, desires, etc., can somehow be reproduced by another person (to wit, the historian), and yet distinguished all the time as belonging to the former 'properly.' Take away any one of these conditions, and history becomes impossible. They are, therefore, with reference to active historical thought, true categories whereby immediate 'facts' are transformed and brought into a wholly new system. Simmel shows very clearly how each of these inner conditions is, in the barely logical sense, unprovable and, in the sense of natural science, barely conjecturable. In reconstructing mere isolated facts we aim to get a view that is worth our while (p. 41). Even our conception of our own past is a recast made with the same pragmatistical design. The transformation is best grasped by being compared with artistic renditions, which always cast a highly complicated idea (meaning) into terms of only one of the 'five senses.' In history we find some *a priori* chosen standpoint necessary in order to 'see' anything at all; even the projection into terms of a causal series is a selected way of looking at the data and not something 'given' in them. Simmel describes the whole procedure very happily as a shifting of emphasis (p. 42); but it is, of course, more than this.

Chap. II: the laws of history must be fixed by the philosopher, not by the historian. The reason for this strange necessity lies in the unique concept of law found and used in historical study (p. 67). The only real state of affairs,—in the metaphysical sense?—are the motions of the minimal parts and the laws ruling these same (p. 75). But history, following the natural tendency to think things much less complex than they are, deals with vast vague aggregates (church, state, overproduction, political corruption, capital and labor, etc.) as if these were true 'elements' standing in definite relations (active and static) to one another. A strict construction must refuse to admit that such relations as historians have thus far

discovered are true laws; how shall they be viewed then? There are two ways whereby we may give them a positive significance: first, by treating them as relative values, approximations, anticipations; and secondly, by regarding the original syntheses, collective concepts, combinations, etc., into which the historian orders reality as unities which need no further analysis *for the purpose of historical knowledge* (p. 98). (Here, the 'elements' of natural science are never reached because they belong to a totally different plane of thought.) Simmel brings up three typical cases to show that this latter standpoint is not only used but wholly justifiable; history wants to know, for instance, how groups behave under certain conditions, how typical-social activities are related to one another, and what the rate of frequency or recurrence of certain typical acts, regardless of their individual causes, is. Each of these pieces of *desired* knowledge forces the use of special categories of synthesis. The justification for such categorical reconstructions lies primarily in the functional value of conjecture itself; and just here history reveals its kinship to philosophy, for both these ways of approaching the world have a value wholly independent of what may be concretely conjectured from time to time (p. 110).

Chap. III: looking merely at what is recorded in history, we find two problems for the philosopher: first, history being a sum of empirical data, two queries arise—Has the whole of history its own special meaning? and: Is there a transcendental reality back of the data, and if so, what sort? Second, is the problem of the evaluation of the data by individual observers (pp. 114 f.)? These two problems must be carefully distinguished, for teleological reflections on history are wholly different from worth-interpretations of specific historical data (for instance, the feeling of worth may well arise from something other than a transcendental aim). Simmel shows that the purely teleological problem is solvable in any way without affecting concrete historical interpretation, hence is always answered out of personal interests and grounds. At the same time the peculiar fact becomes evident that the less metaphysical significance we find in single events, the greater becomes our need to read such a meaning into the whole (p. 117). The problem of individual evaluation can be solved fully only by a careful analysis of non-theoretical (trans-theoretical) types of 'projection' or interpretation (p. 122). These have never yet been worked out as they should be. Philosophical interest centers in the primary trans-theoretical *fact* that a certain interest motivates all knowing and systematizing. But historical knowledge itself has its own primary interests; first, the historical 'contents' and, again, the values of such, the purely *human* attitudes and responses to such contents. These values are independent of the existence of their 'objects' (just as ethical values are, for instance), but there is at the same time an interest in things *merely because they exist*. And just this 'mere actuality' of things gives to the science of history its own deepest interest, which is naïvely expressed through the desire to reproduce things 'as they really happened' (p. 135). For all this, the breaking-up of the real world into systems such as the scientific and the historical ones is determined, not

by the reality or 'mere ideality' of things *as such*, but wholly by the specific interest of things, which is fundamentally irrelevant to being and not-being; the interest in existence is, Simmel says, *within* historical knowledge and not transcendent.

Simmel uses two important illustrations to show how the methods of collating and fixing historical evidences and ordering facts depend upon trans-theoretical presuppositions; the prevalent notion of 'progress in history' and the economic-materialistic theory of social evolution are the cases in which the author shows his theory to hold good. 'Progress' is not an objective peculiarity existing apart from human evaluations, for 'the concept of value contains no general element applicable independent of subjective selective evaluation' (p. 146). The quasi-scientific assumption that mere changes as such are true progress is equally a matter of opinion backed up by no evidence. The assumption that the aim of cosmic activity is unknowable, however, leaves us *logically* free to hold this opinion. And in fact such a transcendental goal is what is meant, and never merely the realization of a Golden Age in the course of events. Again, 'progress' presupposes the unity of the world, an identical 'world-ground'; but this can be shown to be merely a projection of the continuous, structural character of our own experiences. Projection of this structure into the time-series yields the notion of Progress (p. 151). The second illustration, historical materialism, discloses the assumption that all social activity is a product of simple economic 'forces,' of which the truly causal one is hunger. This primacy of hunger is a creation of the theorist, who selects from a mass of equally 'given' interests and motives this one because of its universality. But universality does not imply causality; at most, it indicates a basis for systematizing facts. The hypothesis that one member of a group (of 'forces') can interpret the whole group involves, however, the belief that each member of this group can do the same (p. 154). Historical Materialism errs then only when it claims to have found the *real ground* of things (events) instead of an adequate, special interpretation. As a philosophy, it fails utterly to account for the rise of conflict out of situations where, according to its own teachings, complete *economic* adjustment is found. And its deepest presupposition is that mental processes, types of thinking, feeling, acting, etc., are absolute constants throughout history and hence negligible factors (p. 160).

In conclusion, Simmel denies the skeptical tendency of his pragmatistical theory of history by indicating the strictly functional character of truth. The *sought* character of connections between elements drawn from immediate experience is *eo ipso* different from given connections, so that every demand made upon historical science to render a reprint of immediately given actuality, is out-and-out absurd. It is not an inability to reach the absolutely given, but rather a disinclination to be content with such a protoplasmic mass that makes history 'relativistic.'

The main tendency of the book will not strike the American reader as new, however original it may be in the writer's own inner development. But its application to a sadly neglected field brings up a wealth of dis-

tinctly new facts which, if I see aright, can not fail to have a salutary effect upon the thinking of pragmatists and humanists. Above all, Simmel's treatment of the functional character of the *a priori* is deserving of praise. He avoids most successfully that lamentable confusion of assumption or postulate with hypothesis or arbitrary acceptance which marks many discussions of pragmatism. For him, 'it plays a dynamic rôle in our *representational* activity (one common view is that it appears as an explanation for something over which we *reflect* . . . a real function . . . whose significance is not exhausted in the logical content of the concepts wherein it is later found expressible, but solely in its effectiveness in *bringing into existence* our world of knowledge' (p. 8). Whereas other pragmatists incline to view the *a priori* as a fact in ideal *reconstruction* of data. Simmel finds it present as a function of the data themselves.

The weakest point in the book centers, in my opinion, about the view that 'the task of history is possible only in so far as, in some mode or another of psychical translocation, the willed deeds (of historical characters) are willed by the historian, the feelings felt by him, etc.' (p. 29). This is an appeal to a sort of literal reproduction surprisingly like the naïve 'one-to-one correspondence' which Simmel is most concerned in refuting. The fundamental supposition back of such a reproduction is that we *understand* the mental attitude, feeling, intention, of another only in so far as we induce in ourselves a like state (perhaps much weaker or more fleeting, but still the same qualitatively). The extent to which this notion pervades current psychology needs no mention here, any more than does its utter absurdity. I fail to see why there must be a qualitative correspondence between the thing known and the state of knowing it merely in the case of other persons' mental states. Why not be consistent and say that we must think of ourselves as yellow when we 'recall' a pumpkin? Luckily, the particular way of proving the need of an escape from solipsism is immaterial in the present work; the greatest disaster the chosen way has worked is a negative one, Simmel having prudently refrained from explaining the details of 'objective projection.' He merely notes that 'certain combinations of ideas are accompanied by the feeling that they have typical validity independent of the momentary state of mind which realizes this inner relation of the ideas' (p. 31). It need hardly be said that this explains nothing, merely stating a fact true of certain *experiences*, but never necessarily of certain *meanings* ('experience' means here any mental *event*). And when he comes to explain how men, particularly geniuses, reproduce things they have never experienced in any way, Simmel is forced to drop the correspondence hypothesis and accept a purely psychophysical one, viz., of inherited dispositions (p. 56 f.). It is only fair to note that he recognizes this to be perhaps merely a useful fiction or symbol (p. 61). Would it not be worth while to reconstruct the above three or four points from the standpoint of a wholly different psychology, which sees in the act of meaning-comprehension absolutely no more necessary 'reproduction' of the object in the subject than is found in the case of sensing light, tasting bitter, etc.?

One other point I would like to raise for discussion. At the very outset Simmel states that it is an absolutely indispensable postulate of all historical research that there be unique personalities, as laws or principles of synthesis, 'back of' the detailed facts immediately given (p. 21, etc.). Might I ask here whether personality, in the extreme sense used by Simmel, is a true category or, on the other hand, one of those group-unities which, as Simmel shows, it is the aim of history to study? In other words, would it not be possible to assume that the uniqueness is not a quality in the group of functions, but rather, as in physical objects, a temporal and spatial one? Is not personality the upper limit of the group-concept? The answer to this will determine to a large extent our philosophy of history. While fundamental in a philosophical sense, however, this problem can never seriously affect concrete historical interpretations nor yet modify the true postulates of historical science. One might, I think, differ from Simmel on this one point even without giving up allegiance to the excellent theory of history he has developed for us here. Personality may be a very useful hypothesis and yet no postulate.

The real contribution made by the book is its keen and original analysis of the nature of laws scientific and historical. It has proved impossible to restate here at all fairly the nice dissections made. Indeed this same impossibility is evident throughout the entire review, for Simmel is the most fine-thinking, intensely theoretical of modern Germans. The most unfavorable thing to be said of his latest work is that it is too compact and suggestive to make easy reading even for the professional metaphysician. In every other respect, however, it deserves unstinted praise. Pity that its form virtually prevents it from being read extensively by historians and economists.

WALTER B. PITKIN.

BERLIN, GERMANY.

Principia Ethica. GEORGE EDWARD MOORE. Cambridge: The University Press. 1903. Pp. xxvii + 232.

Mr. Moore's volume does not admit of simple characterization and classification. In its conception of the ethical problem it might seem the work of a young man removed from academic discussion and versed rather in histories of philosophy than in its history, yet in many of its acute criticisms and luminous statements it would seem the product of mature reflection and wide reading. The author writes at times with as much innocence as if no one had written before him and, again, with an exasperated animus born of long familiarity with trivial criticism. His discussion belongs upon the plane of modern thought, yet occasionally he indulges with delight in subtle and profitless distinctions worthy of traditional scholasticism. As a whole, it must be confessed that the book leaves the impression of much misdirected ingenuity due to an intellectual egotism that prevents the sympathetic appreciation of the work of others.

The purpose of the book is to make clear the distinctness of the three great questions in ethics and to suggest the outlines of the answers to these. These questions are: (1) What is the meaning of the notion

good? (2) What things are good in themselves? (3) What things are good as means? The failure of earlier ethical systems is due to their neglect of these fundamental distinctions.

Good is a simple, unique conception. We know what it means immediately, but we are unable to define it by reduction to simpler terms. In this it is like the pure sensations, and the moral faculty might well be called a moral sense and its action an intuition. To resolve the judgment of goodness into one of pleasure or life or reality or will, is to commit the naturalistic fallacy. These things may deserve the predicate good, or be good, but it argues confusion of thought to prejudge the question by identifying the notion good with any of these. Such confusion would reduce the hedonistic thesis, that pleasure alone is good, to the unmeaning identical proposition that pleasure alone is pleasure. To make such statements significant there must be some distinction between subject and predicate. The author has perhaps overelaborated his point here, but his discussion is marked by much clearness of statement.

In his consideration of his second problem, the nature of that to which this predicate good is to be applied, the author treats of the answers given by the naturalistic, hedonistic and metaphysical writers. These agree in that they all involve the naturalistic fallacy of failing to distinguish the first and second of the problems in ethics. They assert some one thing to be good because good means this thing. They differ in that the first two classes make this thing a natural object, whereas the last finds it in a supersensible object. Spencer and Mill are subjected to the standard criticisms, but Sidgwick, with whom the author is more in sympathy, is treated more independently. His criticism of the latter centers on the asserted distinction between the individual and the social good, with the resultant possibility of conflict. "What, then, is meant by 'my own good'?" In what sense can a thing be good *for me*? It is obvious, if we reflect, that the only thing which can belong to me, which can be *mine*, is something which is good, and not the fact that it is good. When, therefore, I talk of anything I get as 'my own good,' I must mean either that the thing I get is good, or that my possessing it is good. In both cases it is only the thing or the possession of it which is *mine*, and not the *goodness* of that thing or that possession. There is no longer any meaning in attaching the 'my' to our predicate, and saying: 'The possession of this *by me* is *my* good.' Even if we interpret this by 'My possession of this is what *I* think good,' the same still holds: for *what I* think is that my possession of it is good *simply*; and, if I think rightly, then the truth is that my possession of it *is* good simply—not, in any sense, *my* good; and, if I think wrongly, it is not good at all. In short, when I talk of a thing as 'my own good' all that I can mean is that something which will be exclusively mine, as my own pleasure is mine, is also *good absolutely*; or rather that my possession of it is *good absolutely*." (p. 98.)

The discussion of metaphysical ethics is the most unsatisfactory part of the book. It is an illustration of the author's central idea that the judgment of value is unique and can no more be resolved into a judgment

of reality, even supersensible reality, than it can into one of pleasure. The good is not even a pure will, since the goodness of a will as much presupposes the independence of its object as does the truth of a theoretical judgment. The truth of every mental process is distinct from its occurrence. All which, while containing much of truth, seems irrelevant to the author's purpose.

The last two chapters treat of the third ethical problem, the means by which the good may be realized in life. These means are stated generally in the common system of moral rules and duties and the problem resolves itself largely into the question of the validity of these rules. The author is rather skeptical as to the possibility of so foreseeing the consequences of our actions as to be able to assert unconditionally that any given course of conduct is right. We can at most say that if society maintains certain conditions certain actions will probably be the best. Nevertheless, it is wise for the individual to submit himself in all cases to the great fundamental laws rather than to trust to his own calculations of what is best in his own instance. The good to be attained by these means consists in 'certain states of consciousness, which may be roughly described as the pleasures of human intercourse and the enjoyment of beautiful objects.' These things are good in themselves and need no excuse for being. This conclusion is not hedonistic, since it recognizes many things other than pleasure as good, nor is it naturalistic, since it makes the connection between goodness and these complex things synthetic rather than analytic. The Good is simply the Good, though many complex things participate in it.

NORMAN WILDE.

UNIVERSITY OF MINNESOTA.

Ursachen und Folgen der Rechtshändigkeit. Dr. ERNST WEBER. Halle a. S., Marhold. 1905. Pp. 115.

As the title of this book suggests it is naturally divided into two parts one of which deals with the causes of right-handedness, the other with its results.

In the first part the author summarizes and briefly discusses the established facts concerning right-handedness in children, animals and primitive races, the evidences furnished by history, right- and left-handedness as at present observed among civilized men and theories of the causes of the phenomenon.

To attempt to summarize Weber's summary of the facts, most of which are well known, would be useless, so we may turn at once to the theories. The following five types of theory of the cause of preference for the right hand are considered: (1) Position of the heart and nature of the blood-supply; (2) position of the child before birth; (3) position of the center of gravity of the body; (4) chance; (5) position of the organs of the body, as indirect cause.

Dr. Weber tries to show that the first four of these theories propose as the causes of right-handedness what are more probably effects. After indicating his reasons for believing that a consideration neither of structure nor of function alone can furnish a satisfactory explanation of right-

handedness, he presents arguments in favor of the indirect influence of the position of the organs of the body in connection with the forms of activity which were demanded by the environment of primitive man.

The discussion adds little if anything to our knowledge of the subject, but it does forcibly call attention to the danger, in genetic studies, of mistaking the result of a phenomenon for one of its conditions.

The results of right-handedness are discussed under three heads in the second part of the book: (1) Indications of the influences of right-handedness on the brain; (2) writing as a cause of the unilateral position of the speech center; (3) possible disadvantages of the more limited use of a hemisphere.

In view of the commonly accepted facts there can be little doubt that structural asymmetry in connection with certain environmental demands for motor adjustments has brought about the condition of right-handedness; and this in turn has conditioned important structural changes in the organism. Structural asymmetry is both a cause and a result of right-handedness. Both structure and motor adjustment have played a part in the establishment of a preference for one hand rather than the other.

A chronologically arranged bibliography of the subject, which should be of value to any who wish to get a thorough knowledge of the literature, is appended to the work.

ROBERT M. YERKES.

HARVARD UNIVERSITY.

La durée des sensations visuelles élémentaires. PIERRE JANET. *Bulletin de l'Institut Général Psychologique.* 1904.

In connection with his well-known studies of obsessions, phobias and other forms of mental depression or loss of mental force, the author has long sought for some symptom that, more than the more general symptoms such as aboulia, timidity, lack of attention, should be capable of exact and comparative measurement. At one time he hoped to find such a measure in the reaction time, but experiment showed that it was not correlated with weakness of attention. Yet the general impression gathered from careful study of these patients is that—in spite of superficial appearances to the contrary—their mental processes are distinctly slow. A possible measure of speed or slowness of certain very elementary conscious processes was sought in the phenomenon of visual flicker. An apparatus was constructed, in which,—by the use of an electric motor with rheostat, a clockwork speed-reducer, and an improved rotation-counter,—a disk with alternate sectors of two colors (blue and yellow were used) could be rotated at any desired speed, and the speed measured. The object was to determine the speed of alternation at which the flickering of the two colors ceased and gave way to fusion. It was found, however, that there were several stages in this transition. When the disk rotates very slowly, the sectors are simply seen to move; at a somewhat greater speed, flicker begins, though the two colors are still distinguished; this stage Janet names 'colored flicker.' With greater speed, the colors disappear, giving place to a gray, but the flicker is still apparent—'gray

flicker'; and at still greater speed, the flicker ceases. Colored flicker began, in normal subjects, at about 40 impressions per second, and continued to 130-160 impressions, giving place then to the gray flicker, which lasted to 210-250 impressions, the point of complete fusion. The best point to determine in comparative tests seemed to be the point where the colors disappear. Normal subjects were found to vary about as indicated by the above numbers; many hysteric and psychasthenic subjects, on the other hand, got the gray flicker at 80-120 impressions per second, and complete fusion at 100-200 impressions. Subjects that can be raised from the condition of depression, by suggestive procedure, into a fairly normal state, showed a corresponding rise in the number of impressions per second that could be distinguished as flicker. The author's present report is entirely preliminary, but the method is certainly promising. It may be noted that individual differences in the fusion point were remarked by Sherrington in a recent paper on flicker.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

Influence de l'intensité lumineuse sur certaines phases de l'excitation rétinienne. M. BOURDON. *Bulletin de la Société scientifique et médicale de l'Ouest*. 1^{er} trimestre, 1905.

The 'recurrent image' is known to differ with the intensity of the stimulating light, in that the weaker the light the longer is the interval before the recurrent image appears. The whole response of the retina to a brief illumination is known to be very complex, consisting of 6-8 phases, and the present paper studies the effects of different intensities of illumination on these several phases. The stimulus was presented by a dark lantern showing a streak of light 5 mm. wide and 30 cm. long. This streak is of ground glass, illuminated from behind by a gas-light; as the light is placed back of the center of the streak, the brightness of the streak is greatest at the center and diminishes gradually towards each end. The lantern is mounted on a carriage and can be moved across the field of vision, the eye meantime remaining fixed. The appearances corresponding to the bright center of the stimulating streak were found to differ considerably from those corresponding to the less luminous ends. In particular, the primary response to strong stimulation was prompter and more prolonged. More phases appear in response to strong light than in response to weak; and the stronger the light, the more time do these later phases occupy. Other differences can not well be explained without reproducing the figure given in the original.

R. S. WOODWORTH.

COLUMBIA UNIVERSITY.

JOURNALS AND NEW BOOKS

REVUE DE PHILOSOPHIE. June, 1905. *La théorie physique: son objet et sa structure* (pp. 619-641): P. DUHEM. - Hypotheses grow up independent of the physicist's choice: he receives them. Scientific education must be a compromise between strict logic and the student's intellectual needs. Scientific hypotheses can not be deduced from common knowledge. The historic method is of great importance in physics. *Distinction entre connaissance et volonté* (pp. 642-648): G. VAILATI. - Different opinions about the same matter may be true, since truth is often decided by taste and interest, not by intellectual criteria. Thus the cause of an event is that one of the many antecedents which a given practical interest regards as the most important. The intellect reveals what is possible or ideal, the will decides what is actual. *Le problème du génie* (pp. 649-682): F. MENTRÉ. - M. Draghicesco's theory of genius is in the main true. Of course the *milieu* is a vague affair, but it is a practical concept and appeals to humanity. The great savant is often an ordinary man, made great by training and the forces of his time. *Influences économiques sur les variations de la taille humaine* (pp. 683-697): A. NICEFORO. - Economic poverty, due to igneous soil, is the cause of inferior height. As the soil of a certain region improves, the average height of the inhabitants increases. Tables. *V^e Congrès international de psychologie* (pp. 698-704): E. PEILLAUBE. Analyses et Comptes Rendus: F. Picavet, *Esquisse d'une histoire générale et comparée des philosophies médiévales*: X. MOISANT. J. Laminne, *Les quatre éléments: le feu, l'air, l'eau, la terre*: F. MENTRÉ. A. d'Alès, *La théologie de Tertullien*: X. MOISANT. A. D. Sertillanges, *Les sources de la croyance en Dieu*: J. GARDAIR. G. Sortais, *La crise du libéralisme et la liberté d'enseignement*: P. B. L. Lefèvre, *Du mode de transmission des idées—conception matérialiste de l'intelligence humaine*: F. M. L'enseignement philosophique.

REVUE PHILOSOPHIQUE. June, 1905. *La méthode pathologique* (pp. 557-579): F. LE DANTEC. - The pathological method will throw light on the nature of life. Study of the effect of poisons suggests a functional definition of life. Different nerve tissues and different properties of nerve tissues may be explained as different colloidal states of one and the same chemical structure. *Pathologie du sourire* (pp. 580-595): G. DUMAS. - In a previous paper anatomical and physiological evidence was adduced, and in the present paper pathological evidence is presented, which proves that the smile is explained as the easiest response to any gentle stimulation which affects the facial muscles. Social motives must be evoked, however, to account for its extreme frequency. *Le mouvement philosophique en Russie: les slavophiles* (pp. 596-621): F. LANNES. - The slavophiles in Russia to-day stand for a point of view rather than for details. Taking Hegel as their point of departure, the two preeminent thinkers, Kirevsky and Khomiakov, criticise the powers of reason in behalf of the primacy of religious faith and will. *Erreur et malheur* (pp. 622-633):

J. Novicow. — Social evils are due to the fact that man has not known his own interest. Nations all find their best interest in one another's welfare. Strife of individuals, due to ambition, love, etc., can not perhaps be overcome; but strife of nations, whose hostilities injure all, can and should cease. *Analyses et Comptes rendus*: F. Brunetière, *Sur les chemins de la croyance*: J. PAYOT. J. E. Walter, *The Principles of Knowledge, with remarks on the Nature of Reality*: A. PENJON. J. R. Angell, *Psychology*: T. RIBOT. G. Ballet, *Traité de pathologie mentale*: J. R. DE FURSAC. A. Marchesini, *L'immaginazione creatrice nella filosofia*: FR. P. J. A. Sikorsky, *Sbornik naouchno-léttératournich Statieï*: P. L. D. Draghicesco, *Le problème du déterminisme social*: N. VASCHIDE. T. Dragu, *L'infraction, phénomène social*: N. VASCHIDE. *Revue des périodiques étrangers*. Table des matières du tome LIX.

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE. Band IV., Heft 2, May, 1905. *Abso-lute, kritische und relative Philosophie* (pp. 131-164): H. RENNER. — Rickert, in his 'Einleitung in die Transzendenzphilosophie,' takes a Fichtean position. He does not distinguish the merely metaphysical statement of reality, for which rationalism or naïve realism may be sufficient answer, from the epistemological problem which must start with the distinction of the physical and the psychical. *Die Gliederung der Gesellschaft bei Schleiermacher-Schluss* (pp. 166-177): G. STOSCH. — The latent influence of his conception of the kingdom of heaven traced in Martensen, Dorner, Höffding and others. *Ueber die Erkenntnistheorie der Inder* (pp. 179-225): W. FREYTAG. — Special attention is paid to the neglected and most important school of Nyaya. The separation of formal logic from epistemology is a cause of the largely sceptical conclusion of the Hindoo schools. *Abstammungslehre, Selektionstheorie und Wege der Artentstehung* (pp. 227-262): E. v. HARTMANN. — There is no proof that all earthly living things or even all animals are descended from one stock. The obstacles to interpreting likeness by genealogical relation. Six conditions of selection and five possible effects of it; its distinction from production. Neo-Lamarckism presupposes direction in variation; Darwinism does not. The laws of fluctuating variability, direct adaptation and sudden change are subordinate to that of correlation of parts in a whole. *Zum 100. Todestage Schillers* (pp. 263-264): P. BARTH. *Besprechungen* (pp. 265-286): R. Avenarius, *Philosophie als Denken der Welt gemäss dem Prinzip des kleinsten Kraftmasses*: M. NATH. L. Dille, *Weg zur Metaphysik als exakter Wissenschaft. I. Subject und aussenwelt*: M. NATH. De Wulf, *Introduction à la philosophie neo-scholastique*: H. RENNER. B. Bauch, *Luther und Kant*: H. RENNER. H. Schwartz, *Das sittliche Leben*: L. ROTH. J. Schlesinger, *Energismus*: L. RAUSCHENBACH.

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- Sollier, Paul. *Le mécanisme des émotions*. Paris: F. Alcan. 1905. Pp. 303. 5 fr.

NOTES AND NEWS

PROFESSOR CARL WERNICKE died on June 15, 1905, from the effects of an accident while riding a bicycle. He made his reputation by the publication of 'Der aphasische Symptomcomplex' (1874), which has been ever since the foundation for the study of speech disturbances. His textbook 'Der Grundriss der Psychiatrie' appeared in 1900. Professor Wernicke was just completing his first year of directorship of the clinic for psychiatry at Halle, whither he had been called from the University of Breslau.

DR. KUHLMANN, now of Clark University, has been appointed assistant in psychology in the University of Wisconsin.

H. C. STEVENS, Ph.D. (Cornell), now assistant in psychology at Cornell, has been appointed assistant professor of psychology at the University of Washington, Seattle.

PROFESSOR HUGO SPITZER has been appointed professor of philosophy at the University of Graz.

MR. WALTER B. PITKIN has been appointed lecturer in philosophy at Columbia University.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE REEDUCATION OF AN APHASIC

THE possibility of the speech reeducation of aphasics has long been known and we have several accounts of cases in which after periods of several years patients have practically recovered their normal ability of speech.¹ The method of this reeducation, however, is not known. It is uncertain whether new brain paths are opened in the reacquirement of language and a new habit formed or old paths utilized. There is usually a 'normal' amount of recovery in nearly every case of aphasia, so that a person is able after some days or weeks to speak (if a motor aphasic) or to understand (if the aphasia is of a sensory type) some words or phrases. The suggestion has been made that this so-called recovery is merely the normal functioning of the right side of the cerebrum.

For several months I had the opportunity of observing an aphasic man and of attempting to train him to speak. The patient was a mechanic, aged fifty-seven, who had had a paralytic stroke four weeks before entrance to the hospital on December 12, 1904. His right side had been paralyzed and he was unable to speak. In three weeks after the seizure the paralysis had disappeared but there remained almost complete inability to make himself understood. At first all questions were answered unintelligibly or by 'yes' or 'no.' Later he improved greatly so that sometimes he could answer simple questions regarding himself fairly well, although often his answers were irrelevant and his talk unintelligible.² He had no disorder of hearing or of vision. He was often unable to understand spoken or written language, particularly when long sentences were used, and was unable to talk clearly, using many words and naming objects wrongly (*i. e.*, paraphasia). The difficulty in understanding written and printed speech was so marked at first as to

¹ For a recent account of some cases and discussion see C. K. Mills, 'Treatment of Aphasia by Training,' *Journ. Amer. Med. Assoc.*, 1904, XLIII., 1,904-1,949.

² It should be noted that the patient was not insane, although he was brought for treatment to a hospital for the insane.

suggest some disturbance in the visual sphere, but there was no hemianopsia, and nothing else to indicate such a disorder. During later examinations the patient was found able to read correctly practically everything, provided he was compelled to pay attention to the individual words, or to the syllables of the longer words. His ability to repeat words, syllables and phrases was very poor. There was evidently a great sensory speech defect, with possibly some motor speech disturbance.³

The experiments which were made towards training the patient were comparatively simple, and were chosen not so much to reeducate the man for his daily work as to see how the process of reeducation took place.⁴ Attempts were made to get the patient to relearn (*a*) the names of ten familiar colors, of the nine numerical digits and the number ten, (*b*) a short stanza of poetry and (*c*) the Lord's Prayer. Towards the end of the series of experiments I had the patient try to acquire the German equivalents of a few common English words.

*Color and Number Education.*⁵—A careful examination of the patient soon after his arrival at the hospital showed rather poor ability to name both colors and numbers. There was a tendency to use wrongly the names of colors when describing an object, and often to use the names of colors as names of objects. For example, a piece of glass was called 'green paper.'

In the reeducation of color names ten colored cards, each three inches square, were shown one at a time to the patient. He was asked to name the color of the card placed before him. If this was done correctly he was told 'correct,' if incorrectly, he was told that what he had said was 'wrong' and then he was given a second and sometimes a third opportunity. If after three or four attempts he did not give the right name, he was told the name, and then attempted to repeat it. Sometimes he realized after one trial that he did not know and said so, thereupon the name was given to him and he repeated it (not always successfully, however). The following are the colors which were used: white, gray, black, red,

³The patient died May 1 of pulmonary infarcts. There was an old embolus of the left middle cerebral artery which had caused the primary paralysis and the aphasic condition. Examination of the brain showed a softening of the cortex, chiefly of the left first temporal and the angular gyri. A full report of the case may appear later.

⁴At the patient's age it would have been almost impossible to have sufficiently trained him even had he lived for some years. In the cases of reeducation which have come to my notice, all the patients were in the early years of middle life, when new associations are more easily formed than after the age of fifty.

⁵For many of the results in this section I am indebted to Dr. W. F. Roberts, who carried on this part of the work under my direction.

yellow, green, blue, purple, brown and pink. In the daily experiments these cards were thoroughly shuffled so that no special order was used, and the names of the colors could not be associated with the sequence.

The accompanying tables give percentages of correct answers, the number of experiments, the number of mistakes in naming each color and the frequency of the wrong use of names.

TABLE I.

Percentages of correctly named colors.

Date.	Percentage Correct.	Number of Experiments.
Dec. 21-24	43.6	39
Jan. 12-14	45.0	40
Jan. 16-21	72.5	109
Jan. 24-28	84.7	118
Jan. 31-Feb. 4	87.7	114
Feb. 6-10	93.5	107
Feb. 15-18	92.6	108
Feb. 21-23	95.2	63
March 15	95.2	105
March 17	96.1	52

TABLE II.

Incorrect naming of colors.

Colors.	Incorrectly Named.	Name Used Incorrectly.
White.	6	0
Gray.	14	24
Black.	4	1
Red.	12	8
Yellow.	14	6
Green.	4	8
Blue.	8	29
Purple.	6	6
Brown.	18	10
Pink.	18	2
Orange.	—	4
Numerals.	—	5
Miscellaneous (including non-sense words).	—	22

In Table I. the number of experiments, it will be noticed, differed considerably from week to week. An attempt was made to show each color once each day in the earlier part of the work, but when the patient wrongly named a color and was given a second opportunity this has been counted an extra experiment. The gradual increase in ability is marked, and in the three weeks' interval between February 23 and March 15 there had been no loss of the association of the correct word with the colored piece of cardboard. There was a gradual betterment in naming from week to week, with a tendency to approach the 100 per cent. mark. On the last day of this series when fifty colors were shown, in only two cases did the patient make mistakes in naming, and these he instantly corrected.

During the first few weeks the colors most difficult to name were purple, brown and pink. For purple the patient had at first considerable difficulty, not only in naming the color, but also in repeating the name when it was given to him, but once he had acquired the name the color was always thereafter properly named. The other colors showed nothing striking beyond the tendency to mix the words brown and gray. Blue was evidently one of his stock words and was employed under most conditions when there was any doubt or hesitancy.

It was surprising, however, that 'green' and 'brown' were not more often wrongly used. These words were stock words in the early part of the experiments on naming objects. This tendency has been noted before. Very often in naming some objects the patient would say, either immediately or after a short interval, 'brown paper' or 'green paper.'

On February 28 the patient was asked to name all the colors that had been used in the experiments with him. He said: 'brown, gray, brown, yellow, green, red, blue, purple, pink, black, white.' This would indicate that the names of the colors were not entirely associated with the appearance of the cards, and it is probable that there was more or less abstractive ability.

The experiments on number training were made in about the same manner as those on colors. The numbers were about one inch high, placed on cards four inches long and two inches broad. These cards were placed before the patient separately, but in an irregular order, until he had named them, and when mistakes were made there was a procedure similar to that used in the color-naming experiments. In Tables III. and IV. will be found, respectively, the percentages of correctly named numerals throughout the experiments and the misuse of the number names.

The retention of the practice effect for the three weeks' interval between February 23 and March 15 is noticeable as in the case of the color names (Table I.).

TABLE III.

Percentages of correctly named numbers.

Date.	Percentage Correct.	Number of Experiments.
Dec. 20-24	42.3	52
Dec. 26	42.9	14
Jan. 11-14	66.1	56
Jan. 16-21	71.1	152
Jan. 24-28	67.6	139
Jan. 31-Feb. 4	72.8	136
Feb. 6-10	83.9	118
Feb. 15-18	93.5	107
Feb. 21-23	92.5	65
March 15	92.6	108
March 17	92.6	54

TABLE IV.

Incorrect naming of numbers.

Numbers.	Number of Times Incorrectly Named.	Number of Times Names Used Incorrectly.
1	5	2
2	10	8
3	5	15
4	16	5
5	21	14
6	18	28
7	7	40
8	18	33
9	13	39
10	33	10
Miscellaneous.	—	16

At first there was considerable difficulty in naming '10,' the patient often getting the name only after saying '9-10' or '8-10.' A number of experiments were made to determine any number preference the patient may have had, in order to see whether the accuracy with which any number was named depended upon the facility of its

use. The patient was instructed to give at random single numbers, not in forward or backward sequence, until told to stop. Unfortunately he did not understand the condition regarding sequences, for there was a great tendency to give the combinations 3-4-5 and 7-6-5. The number 5 was, accordingly, the one most used. The variations in totals of the other digits were not sufficiently marked to indicate any special preference, and the ease of liberation, therefore, did not greatly differ.

When the figures in Tables I. and III. are compared with the results of experiments upon the acquirement of a new habit, the resemblance is striking. In forming new associations or habits at first the progress is slow, and the habit is perfected gradually. The curve of efficiency rises by little and little until it reaches its maximum point, *i. e.*, to one hundred per cent. of right cases in experiments similar to these. In the reacquirement of an old habit, the course runs somewhat differently. Consider the case of one who has not had an opportunity to swim or skate for some years. The first time after this period of rest he goes into the water or attempts to strike out on the ice the adjustment of the muscles and the movements necessary to properly perform the acts are not very accurate, but with very slight practice most of his former activity returns. In the case of this patient we find that this process, *i. e.*, sudden return to former efficiency after little practice, has not gone on, but that the gradual betterment is more like the acquirement of a new habit. This would indicate, it seems to me, that not all the old brain paths were being reopened, but that in all probability new connections were being made. In harmony with this view we have the fact of the 'vicarious' function of the cerebrum, that one part or one hemisphere may take up the lost functions of another part or side. It seems probable that this is what happens always in cases of aphasia, in which there is any amount of reeducation.

That new brain paths may be broken through is evident from the few experiments made to get the patient to acquire the German equivalents for the words 'pencil' and 'pen.' The patient, it is said, had no previous knowledge of German. The word for pencil (*Bleistift*) was shown to him, the pencil put before him, and he read the word. After each five readings the word was covered up, the pencil was removed and he was asked to give the German word for 'pencil.' In reading the word he made many mistakes at first, for example, *Bleistiff*, *Bleiskiff*, *Bleistaft*, and a combination of *Blein* or *Blant* with one or other misreadings of the second part of the word. In the recall of the word similar errors are noticed. In the same manner experiments were made with *Feder*; the word was shown and a

pen placed on the table in front of the patient. After five readings of the word it was covered up and he was asked to tell what it was. The results of these tests are as follows:

Day 1, A.M. Pencil: Experiments^a 1, 2, 3—*Bleinstift*; 4—*Blantstift*; 5, 6, 7—correct. Twenty seconds later he gave the word as *Bleiskiff*. Pen: Experiments 1, 2—correct. Thirty seconds later he confused this word with the one for pencil and said *Blanskiff*. Five hours later when asked what pencil and pen were, he had forgotten, although he had retained the word *Feder* for an hour. When the word *Bleistift* was shown to him he remembered that it was the equivalent for pencil.

Day 1, P.M. Pencil: Experiments 1, 2, 3, 4, 5, 6, 7—correct. Fifteen seconds later, *Bleisplift*; after forty seconds, *Bleiswift*; after forty minutes, *Beltfed*; and after an hour, *Befat*.

Day 2, A.M. When asked the equivalent of pencil, he said '*Fils*,' and pen, '*Fre, Fra, Frain*.' When the word *Feder* was shown to him he immediately said 'pen.' On this morning twenty-five readings of each word were made by him, and after each five there was a correct reproduction. Twenty minutes later he called a pencil '*Bleiswift*,' and twenty-five minutes after the final repetitions of *Feder*, he said 'pen is *Swe-id*.' Fifteen minutes later he recognized the word *Bleistift* and gave it its proper meaning.

Day 2, P.M. Before any experiments were made in the afternoon the patient was asked 'Pen'? and replied '*Be*'; 'Pencil'? and replied '*Methfas*.' When shown the word *Feder*, he again immediately said 'Pen.' At this sitting two experiments were made with pen, and three with pencil; all the results were correct. Twenty minutes later pen = *Feder* and pencil = *Bleiswift*, and the same answers were given an hour after the repetitions.

Unfortunately at this point the experiments were discontinued before the words had been perfectly learned. The results that were obtained indicate, however, the possibility of the formation of new association speech paths, and the rapidity of assimilation of the two words, show the feasibility and quickness of the reeducation process.

The Acquirement of More Complex Speech.—Many neurologists recommend the training in sounds of vowels and consonants, and the training in the different parts of speech before more complex material

^aEach experiment, it will be remembered, consisted of five readings and the immediate reproduction, as soon as the printed word and object could be taken away. The reproduction is the result noted in each experiment.

^bIt should be remarked that many of these nonsense words can not be accurately represented here. It was extremely difficult to transliterate such unfamiliar sounds, but I have given what appeared to me to be the nearest approach to what the patient said.

is tried. To see how difficult or easy it would be to acquire long sentences and many ideas at once, an attempt was made to have the patient memorize the first stanza of the well-known poem, 'The Village Blacksmith.' The conduct of the experiments was as follows: a part of the stanza, one or more lines, typewritten, was put before the patient. This he read aloud five times, and on its withdrawal he attempted to repeat it. This went on, five readings and then a memory test, until he had several successive times correctly reproduced the part. Then another part was placed before him, with alternate five readings and memory test, etc. A tabular account of the results follows:

First day. Whole Stanza, 5 experiments (*i. e.*, 25 readings and memory tests); result of fifth experiment: "Under the sinews chestnut tree are brawn beside the tree—brawny man with sinewy hands—brawn hands and muscles of broadened hands."

Second day. Line 1, 6 experiments: 2, 5 and 6 correct; line 2, 6 experiments: 2, 5 and 6 correct; lines 1 and 2, 12 experiments: 9 correct.

Third day. Lines 1 + 2, 8 experiments; and alternately lines 1 + 2 and line 2, 9 experiments each: first line given well throughout the series of the combination test; second line given well alone, but not in combination except in experiments 22, 26 and 27. Line 3, 4 experiments: all correct. Line 4, 4 experiments: all correct. Lines 3 + 4 alternating with line 4, 5 experiments each: line 4 remembered poorly alone as well as in combination; experiment 11 (lines 3 + 4), memory correct.

Third day, P.M. Memory of the four lines before experiments were begun: "Under the chestnut tree—springing—no—under the springing chestening tree the village man—man is a mighty man was he." Lines 1 + 2, 6 experiments: 3, 4 and 6 correct reproduction; lines 3 + 4, 7 experiments: 5, 6 and 7 correct memory. Lines 1 — 4, 10 experiments: the best reproduction (ninth experiment) was as follows: "Under the spreading chestnut tree, the village smithy stands. The man, a mighty man is he, with powerful hands and—."

Fourth day, A.M. Lines 1 — 4, 5 experiments, and alternately lines 1 — 4 and lines 3 + 4, 10 experiments each: the best results for the four lines were after experiments 2 and 4. In these two tests there was a mistake in only the third line as follows: "A man—a mighty man is he."

Fourth day, P.M. Lines 1 — 4 and lines 3 + 4 alternately (8 experiments each and one extra 1 — 4): after the ninth experiment, result similar to the morning trials, the other tests were not so good. Each time lines 3 + 4 were used alone, however, the memory for these was perfect.

Fifth day, P.M. The memory for the four lines before any reading experiments were made was as follows:

- A. "Under the spreading swing tree
The villing wishy man.
A man—a mighty man is he
With long—and vigoury."
B. "Under the side of the spreading tree
The wising—the village smithy smelt
The man, a mighty man is he
With—and many name."

Only two experiments were made on this day, lines 1 — 4, the result of the second being like that of the best on the previous day.

No further attempt was made to proceed to lines 5 and 6, as it seemed probable that in the combination of the last two lines with the four previous ones there would be an exaggeration of the difficulty in remembering. The results obtained, however, indicate that the learning process in this patient took on the same character as does the learning by normal subjects. The greatest difference is in the number of repetitions necessary to break through smooth brain paths. The results indicate, in addition, that reeducation is not such a difficult matter, and that a few days' training may be sufficient to change a patient from a condition of very feeble speech ability to one in which he could express his ideas well enough to have his wants attended to. Moreover, this would be accomplished more easily had we information regarding such a patient's habits, likes and dislikes, previous education, books read, etc.

That this last statement is true is borne out by the results of training the patient to rememorize the Lord's Prayer. I desired to work with something the man had formerly known well, in order to ascertain whether or not it took so long as the previous work. Before he read the prayer his memory reproduction was: "Our heavenly Father, in thy name—thy kingdom come." Three readings on the first day with memory test following each did not seem to greatly improve this rendering, but on the following day after three experiments (two readings each) the patient left out very little ('who art in heaven') and became confused in part ('give us each day our daily bread and to do with . . . do our doubts with our debtors without our duties'). The same afternoon two experiments were made, each after two readings, with the result of having the same part confused. On the following morning before reading the patient left out 'lead us not into temptation,' but did not greatly confuse the rest of the prayer. Twelve readings were then made and the memory tested after each two readings. The final result after these experi-

ments was a slight mistake, 'lead us under temptation.' About five hours later after four readings the whole prayer was reproduced accurately and without hesitation.

In number of words this prayer is three times as long and in number of ideas twice as complicated as the four lines of 'The Village Blacksmith,' but the subconscious remnants of the prayer, coupled perhaps with a greater interest, served to make the patient master of this composition after twenty-five readings.

The results of all the experiments indicate the relative ease of reeducation in conditions of aphasia, and it appears advisable to attempt such reeducation whenever the physical condition of the patient permits. There is danger of too great mental as well as physical work in some aphasic cases and a too rigid course of training should not be attempted. Aphasias due to emboli could, of course, be more actively treated than the cases due to cerebral hemorrhage. In all cases in which there is a possibility of training, a few minutes each day, morning and afternoon, would soon produce noticeable betterment. The experiments which have been carried on with this patient seem to indicate that new brain paths are opened in the reeducation process, and in this work it is probable that the right side of the cerebrum takes part. More experiments are needed (and on more cases) along the lines of the formation of definite speech associations before the latter conclusion can be conclusively drawn.

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DISCUSSION

IMMEDIATE EMPIRICISM

PROFESSOR BAKEWELL writes as follows, in an open letter to me in this JOURNAL concerning 'Immediate Empiricism':¹ "My difficulty, in short, is simply this: Either everything experienced is real exactly as, and no further than, it is then and there experienced—and then there is no occasion to speak of correcting or rectifying experience; or, there is in every experience a self-transcendency which points beyond that thing *as experienced* for its own reality—and then good-by to immediatism." And in a foot-note he says that my view is atomistic, chopping reals off from one another, and that, if 'this consequence is avoided by making the earlier experience con-

¹ Vol. II., No. 19, p. 521. See also this JOURNAL, Vol. II., No. 15, p. 393.

tain implicitly the later to which it leads, immediatism gives way to a doctrine of mediation.'

There was once a botanist who suggested that instead of deducing botany from the concept of plants (and from certain allied concepts) the proper method was to study plants to see what each was in itself. Whereupon an opponent replied that such a doctrine destroyed botany. "Take the case of a seed"; he urged, "either you mean that this seed just as it now is, and no further, is real, and then growth is impossible; or else there is in the seed a self-transforming somewhat which changes it first into a sprouting plant, and then, finally, into a mature plant with seed of its own—and then good-by to the idea that the reality of the seed is to be sought in just what the seed now, and no further, is. Moreover," he continued, "since each plant in itself is something different from every other, the doctrine makes relation of plants to one another, and hence generalization, and hence science, impossible."

Whereupon the first-mentioned botanist replied that either a given seed is alive and capable of growth, or, dead and incapable of becoming a plant, and that the actual state of affairs in this respect is precisely one of the things to be determined by a study of the particular seed; that it is of the very essence of the method that the question of 'further' or 'no further' should be settled by reference not to general notions, but by reference to the *determinate* character of the particular seed. Moreover, it was just by a study of each plant 'in itself' that one would find out whether it was something unrelated, atomistic, or something genetically and responsibly connected with other plants, relationship being precisely an affair of the determinate character of the seed.

In other words, while I expressly state in my article (1) that a thing which is rectified in a subsequent cognitive experience 'contains within itself' (that is as part of its own concrete determinate thinghood) 'the elements of the transformation of its own content,' and (2) expressly disclaim the possibility of deriving any conclusions whatever from the concept of immediate experience, Professor Bakewell expressly assumes (1) that the very *concept* of immediate experience carries with it some necessary implication regarding the character or nature of *what* is experienced, and (2) that it precludes any continuity of experienced things. As an immediate empiricist, I can only reply that it is to things *as* experienced that I go for instruction as to continuity, transformation and mediation; and that it is just because I find things immediately experienced *as* continuous, and *as* self-rectifying that I believe in continuity and self-rectification. Compare the distinction of cognitive and cognized

in the former article, and the reference to the importance of the 'drift, occasion and contexture' of things—distinctions which are inherent and not external to the things. Does the transcendentalist believe that things *as* experienced are continuous? If yes, why should he charge an empiricist with *ex officio* denial of this empirical fact? But if he holds that a transcendental principle or function is required to give continuity to what *as* experienced is 'chopped-off,' then *he* would seem to be the one denying actual, empirical, continuity. I am always wishing that some transcendentalist would expound and expose his own positive doctrine about the problems which he accuses the empiricist of maltreating, instead of assuming that the transcendental position is self-evident, or at least thoroughly understood. Perhaps Professor Bakewell will help in this illumination, bearing in mind that an important motive in developing the newer philosophy has been the conviction that mediation, continuity, reconstruction and growth are facts which transcendentalism has failed consistently to define and account for. I do not understand the notion that because things of immediate experience are real, mediation can not be real. I am quite sure that the logic of immediate empiricism would include mediation along with the categories 'subjective, objective, physical, mental, psychic, etc.' (see Vol. II., p. 399) and say, 'if you wish to find out what it means, go to experience and see what it is experienced *as*.' I find difficulty in realizing the difficulty which one has with immediately experiencing something *as* mediate. I don't see *any* way of experiencing the mediate (any more than of experiencing a cat or a dog) excepting that of immediately experiencing it *as* what it is, viz., mediate. If I were to make a guess as to the origin of the difficulty, I should refer it to a mental habit of employing a conceptual, instead of an empirical, philosophy,² a habit so inveterate as to display itself even when one is attempting to appreciate the position of an empiricist.

I conclude with a question and a remark: Does Professor Bakewell mean to deny (1) that all philosophic conceptions must somehow enter into experience, or (2) that all experience is, *as existence*, immediate? The remark is, that I quite meant my earlier statement, (Vol. II., p. 399), that from the postulate I gave, not a single philosophical proposition could be deduced—that its significance was that of affording a method of philosophical analysis.

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² Lest I be charged with intimating that concepts are unreal and unempirical, I say forthwith that I believe meanings may be and are immediately experienced *as* conceptual.

UNIVERSALS: A CRITICISM

THE study of concepts is no longer in its infancy, but it does show now and then headlong tendencies to extremes, which is perhaps indicative of a lusty youthfulness freshly entered upon. The most absorbing fad—pardon the word!—in present-day logic seems to be the ultra-psychological one. I do not say ultra-empirical, much as many of those who pursue it believe that it really is this. But empiricism of to-day is thoroughly antidualistic, and this can not be said of all the 'logical' theories of concepts. I have in mind an especially interesting paper on universals by Dr. Sheldon which strikes me as illustrating most excellently the ultra-psychological tendency which carries us away from every sort of empiricism that I know of. While agreeing verbally with the writer on many fundamental points, such as that of the 'concreteness' of universals, for instance, I find upon analysis that the harmony does not get beyond the rhyming stage; for what he means by his terms are not things which I can find to be an empirically justifiable interpretation. Just because the differences between us are so heaven-wide, I have ventured to formulate them here in the firm belief that whatever mistakes either or both of us have made will come to light by some such systematic comparison. And, inasmuch as I can agree to many of the statements Dr. Sheldon makes, and am, for all that, unable to fit them together as he does, it is pretty certain that there are verbal equivocations which are 'playing horse' either with him or with myself. The question then is, What are they, where do they lurk, what havoc have they wrought?

After mentioning the views of Bradley, G. E. Moore, and Royce, Dr. Sheldon states that they rest upon a misconception, and expresses his own conviction that the universal 'is rather a definite presented aspect of concrete experience, something we can observe and identify.'¹ And further on: 'All the properties of a universal, all that it actually means to us, is worth to us, can be defined in concrete terms'; it is, moreover, 'just as fully concrete as the individual event in time, and as such has as good a metaphysical status as the latter.' To all of this I can subscribe to the letter, but I fear my letters spell different words from those the writer makes them combine into. The difference in interpretation hinges here upon what we are going to call a presented aspect of concrete experience. To my mind, concrete experiences are experiences of concrete things, which latter are presented in various aspects. The processes we find upon reflection and experimentation to mediate knowledge of such things are them-

¹ *Philos. Rev.*, XIV., 196.

selves concrete experiences or aspects of such only when we attend to them, discover them by comparison and analogy. In this respect, such processes stand in virtually the same relation to knowledge as the psychophysical ones (in the narrower sense of neural transformations) do. Taking this standpoint, it becomes impossible to regard anything as a present aspect of an experience unless it is something that is presented in and through the experience. What we find retrospectively to have been an element in the process of experiencing something is now, in our new reflective experience, a presented aspect of the object in mind, viz., the process of the past mediation. In other words, I call an aspect of experience only that which we can observe and identify in what we experience. The '*mouches volantes*' which I can note while looking at the house across the way are not aspects of the house, but merely other things given along with the house in their own peculiar way; mere coexistence in the same experience-moment does not lead me to relate them, but does force me to treat them as aspects of the whole experience-content. Put briefly, then, concrete experience is not the detailed analysis that scientists, viewing it from a special, peculiar standpoint, may render; it is nothing save the intended things *as intended*. We have full right to inquire into this intending process, provided we do not perpetrate the vast blunder of supposing that our analysis of it somehow changes the nature of what is actually intended. What is changed as a result of our new studies is solely the value of the intended things; for knowledge of the limitations of how they became intended enlightens us as to their use in the next case. For instance, we may have really meant something which does not exist in the way we held it to, and a thorough insight into the nature of thinking processes may warn us away from intending non-existent things. A case in point is the universal, in the sense Dr. Sheldon means it. To it we now turn.

The method of approaching the universal adopted by Dr. Sheldon impresses me as extremely hazardous. He invites us to "consider the term 'red apple.' What are the facts when we entertain this, and recognize that it is a general term applying to many possible instances?"¹² As I look at the matter, the case we are called upon to consider here is not the correct one, chiefly because the recognition of the words as a general term applying to many possible instances is neither an essential phase of the process of thinking a universal nor yet a peculiarity of the universal itself. In other words, the situation above portrayed is not one in which a universal is given in its normal sense at all, but is viewed from the standpoint of the individuals falling under it, which individuals in turn are not viewed as

such, but rather from the psychological standpoint of so many mental events. Let us see whether this criticism can be maintained.

There will be no discussion over the fact that the origin of the idea of a given universal, *i. e.*, the way the universal comes to be known, is something wholly different from the 'content' or thing-character of the universal itself; and further that an equally great irrelevance obtains between the way the universal is first built up in knowledge and the way it recurs as a familiar thing in habitual thinking. The one thing American pragmatists have put beyond all intelligent controversy is just this double fact. Accept it, though, and you can not go ahead with a study of the way a universal is experienced until you have prescribed which type of experience you intend to analyze. Every known thing being mediated, it appears that there are three mediating processes, one for the *rise* of the thing in knowledge, one for its *adequate definition*, and one for its *functional use* in 'situations.' This latter process is plainly a generalization, inasmuch as each distinct use of a thing probably entails a corresponding variation of process. Another highly significant difference is to be found between the process of understanding a universal directly communicated and that of thinking a universal in one's own thought, *i. e.*, by association, inward suggestion or the like. And there may, for all I know, be other even more important types of mediation-processes.

Let us suppose, now, that we want to study the status of the universal. Plainly, if we are going to take the processes of mediating it into account in the belief that these somehow affect the standing of the mediated thing, we put ourselves under obligation to investigate all process-types alike. For we have no reason *a priori* for supposing that any one process is '*realler*' or more significant than any other. Therefore we would have to ask ourselves: What are the facts when a series of experiences culminates in bringing to knowledge 'red apple' as a wholly new thing? What are they when we attend to this new thing and define it? What when 'red apple' functions in connection with other things to bring forth new knowledge? What when it merely appears as a suggestion, in a 'fringe,' etc.? And an indefinite number of other similar questions, the number of which no man knoweth. All being finally answered, some sort of comparison or reciprocal evaluation would have to be made—but from what standpoint, if not from that of the particular universal *as meant*, I do not know. Now, Dr. Sheldon has discussed only one very special process, namely that of mediating the *definition* of a universal. In ordinary life we rarely recognize the applicability of the thing in mind *as a term* to many possible instances; such a recognition occurs perhaps in the thinking of logicians and lexicographers now and

then, but not in the intellectual operations of ordinary people with the things meant. Indeed, the applicability of a term to many possible instances has, for the common man, absolutely nothing to do with the fact that many universal things have numerous individuals 'under them.' Looking at the facts as best I can, I would say that the 'universality' of 'red apple,' far from having anything to do with the ways I can use these two words to label various 'experiences,' is merely my way of indicating with a positive predicate the fact that *a red apple, so far as I know and mean the thing, contains no characteristic or peculiar function that can regulate the appearance of the fruit in consciousness.* And when I think of 'red apple' as 'containing under it an indefinite number of individual red apples,' I mean merely that, *when I think of a red apple without further qualification (than redness), I have placed no restrictions upon individuality, i. e., have not so prescribed the functions of the apple in question that only one particular apple could function to illustrate what I mean.* I never refer *positively* to other concrete instances, other individuals, other processes, or the like; the very fact that I refrain from so doing contributes to make the meaning of 'universal quality' as I think of it reflectively. But, entirely apart from what I believe here, would it be a good explanation of the concreteness of the universal if I were to study my mental processes in presenting the above 'definitions'? I fear not. And yet just such a procedure is found in Dr. Sheldon's approach to the problem, as a further study of his analysis will disclose.

Accepting the particular experience-type offered us, we find first of all, it is said, a concrete image, to which is added 'a recognition that this motor response, this image, this phase of the present process, will apply as well to various other possible situations as to the present one; this is what we signify when we speak of the intent to refer to other similar possible experiences besides the present.' But let me ask anybody who has not been convinced that mere 'mental states' can explain everything, whether he really does recognize anything like this whenever he experiences a 'universal' thing. Surely, not even the most highly trained psychologist ever reaches this point. But what is true is that if we look at a universal as a general term applying to many possible instances, in short if we look at things called universals from the lexicographical or grammatical standpoint, we may well recognize that what we now have concretely 'in mind' as the definition of the terms in question will do quite as well to mediate the thing to us at any moment when our mental organism is substantially what it now is. Thus, the recognition of applicability to other instances is also the psychophysicist's recognition of the inadequacy

of the present mediating image, motor response, or the like to exhaust the meaning of 'universality.' For the words 'red apple' are, when experienced sensationally or perceptually or imaginatively, not the things meant, but solely tools to thought, symbols of genuine significances, so that what goes on in understanding the significance of words is by no means the experiencing of the things we critically call universals. It is easy to see in all this where the root of the age-long controversy between realism and nominalism (in the scholastic sense) lies; and the modern disputes about concepts draw their nourishment from the same evil stem. The difficulty is not so much how many things can be classed together in the basis of common characteristics as it is how, in meaning the class-basis as such, I can do so without simultaneously having 'in mind' somehow or other all the possible things from which the class-characteristic is drawn. And Dr. Sheldon admits just this to be the cause of the trouble when he discusses the nature of 'possibility.'

He explains the 'possibility of other instances' as necessarily a concrete aspect of the universal-experience; 'we feel that it must refer to something real, some real character about our experience.'³ And, driven on by this conviction, he succeeds in finding that, in the case of seeing a red apple, there is a suggestion of other red apples or images of them; "the faint motor response of grasping and eating suggests that a similar response may occur again. The suggestiveness, however, is neither more nor less than what we mean by the phrase 'the possibility of further similar cases.' " All of which is to me a desperate attempt to maintain a theory and nothing more, for I can not find in any of my faint motor responses to red apples or other things any suggestion that there may be more responses like them later on. Still less is this what I have ever meant when talking about the possibility of further similar cases; were I to speak of such a possibility in connection with red apples, I would mean merely that, so far as I know anything about red apples and their laws of growth, geographical distribution, market demand and so on, there is no tangible positive reason adducible why there may not be apples of that sort to-morrow, next year or on some other star countless æons hence, nor why there may not now be millions of apples which absolutely no psychic organism comes into any true connection with. Perhaps in the very act of thinking the above sentence there were many images haloed with pointing suggestions; but if there were, it was not this tendency toward the fringes that I meant by 'possibility.' - And let me here ask the reader whether he can identify thinking-a-thing-possible with the experiencing of things (images,

³ *Ib.*, 197.

responses, motions, etc.) in a way leading up to the 'notion' of possibility? Personally, I am unable to.

We are told explicitly, however, that 'all that the universal means to us, all that is actually of any use in our thinking, lies in the fringe of suggestiveness that accompanies one particular case.'⁴ This statement contains in a condensed form all the most serious equivocations in the entire problem; to detail them becomes highly necessary to every final mutual understanding. First, the universal may be construed either as the particular thing referred to in thought and reflectively called a universal, or as the mere words symbolizing any member of a class, or finally as the peculiar indefinite quality of the thing which makes it non-individual and 'abstract.' In the first sense, red apples do not lie in any psychic fringe, but usually hang on trees or stand in barrels down cellar; in the second sense, the words unquestionably do consist largely of suggestive elements of various kinds which aid and supplement the merely sensed words in conveying their socially fixed meaning; and, in the third sense, the 'abstract' character of 'red apple' is a mark of the mere lack of those qualities and functions which, from whatever standpoint we take, force us to think of some one object in space or some one in time (*e. g.*, a mere momentary 'experience'). Inasmuch as my own training, or lack of it, makes me speak of a universal in the first sense mentioned, I can not agree with Dr. Sheldon's remarks about where it lies. The second equivocation lies in the meaning of 'use in our thinking'; the things that are of use to *us* are, of course, various objects we have come to know, but we do not use them in our thinking in quite the same way that we use a pen in writing. The things themselves are of use in *doing* something; but thinking itself is, properly speaking, only a tool for doing something too.⁵ But it differs from other things in that it is the medium through which all these latter become significant, effective, and valuable to us. Hence there is a perfectly good sense in which we may say that all that red apples mean to us lies in the fringes of suggestiveness accompanying the acts of thinking them; that is to say that we reach things as 'complexes,' 'centers of activity' or the like through other media than mere sensations. And universal things are like all others in this respect. But it is a very different statement that makes the 'quality' of universality consist in a certain sort of feeling, full, pointing or the like. If a universal meant only this, then as soon as we discovered the fact all utility would vanish. The odd thing is that psychological logicians often fail to see that what lies in suggestive fringes is not merely a bundle

⁴ *Ib.*, 202.

⁵ 'Doing' here means every sort of *directed* activity.

of tendency-feelings, but quite as often perfectly definite things which in themselves are no more mere mental states than red apples are. This failure, of course, traces back to the venerable error of an antiquated sensationalism which held that, inasmuch as the only true and real things we know are reds and hots and moves and pains, hence things can be really 'given' only in sensational form. Unfortunately, there is no space to discuss the classical perversion here. It underlies, however, the third great equivocation in the statement we are now discussing; the 'fringe' may mean either 'the other things or the other characteristics of the same thing in mind' or else 'the processes mediating these other things.' And the suggestiveness of the fringe is, in the former case, the objective relation between the sensationally given thing and the things otherwise given, and in the latter a feeling of tendency or pointing which somehow means something more than direction, means a *terminus ad quem* in the shape of other instances. For my part, though, I am unable to find in simple feelings of tendency, pointing or movement any implication of a *terminus ad quem*; such implications are merely habitual additions growing out of reflection upon past movements that actually did reach a definite end. The mere process-feelings, then, are not the meanings the logician is studying.

What convinces me most strongly, however, that this ultra-psychological theory is not discussing the logical problems at all, is the fact that Dr. Sheldon's aim is 'to define the universal in relational terms; as something which has a tendency to lead us on to further cases.'⁶ Such a program, however much it can be justified as a psychological one, does not give even a campaign promise of 'better things' in logical inquiry. For it does not distinguish universal things from other things, inasmuch as all things have precisely this same general suggestiveness, so far as I see. Everything is apt to 'recall' some other, and this process is not backward, but forward. The recall is never a mere atavism of mind. But what distinguishes the universal from other suggestive things? Surely nothing in the suggestion-process, at least so far as psychology thus far has disclosed, but solely in the thing itself, the 'red apple,' 'man,' 'potatoes,' 'infancy,' etc.

In conclusion, note the following theoretical dualism underlying the extreme psychological interpretation. The meaning 'red apple' is first grasped, understood in the common-sense way, and analyzed as a *thing*, whereby it is correctly found that no definite red apple nor group of such is meant, that no particular shape, size, flavor, or shade of red is specified, and that the present experience, as a *process of mediating*, does not limit the meaning at all, but leaves open the pos-

⁶ *Ib.*, 200-201.

sibility for other processes to mediate the same identical significance (thing). Now, after having thus gained the meaning of 'red apple,' the psychologist seeks to make this meaning 'concrete' by showing that there are phases in the process of experiencing 'red apple' which correspond to the phases in the meaningful thing 'red apple.' But what is this attempt if not one to set up a quasi-empirical 'one-to-one correspondence'? Instead of talking about the parallelism between mental and neural states, the psychological logician offers us a parallelism between the phases, qualities, and functions of things and the moments in the noetic psychoses that bring these things to knowledge. I see no less absurdity in this than in an assumption that an experience-process of mediating a geometrical figure has as many organic movements as the figure has sides, angles and areas. And in the last analysis such a theory plays the traitor with just those data of pure experience which it professes to make use of, namely the immediate, simple facts of movement, succession, transition and other things which critical analysis shows us to be highly complex *objects*. A taboo is placed upon the now generally accepted view that a complex meaning may appear in an irreducible experience, and *vice versa*.

The claim has often been made that the many discrepancies between what we think and what we experience in this thinking are to be accounted for by the fact that active thinking processes skip along above the speed-limit of introspective description. And, in the present case, it might be urged that the recognition of the response-function and the tendency-feeling is unconsciously present or absorbed in the thought of the 'thing in mind.' Yet is this not a makeshift? It is true that thinking processes are, when compared with all the numberless sensations, feelings, reactions, etc., underlying them in one way or another, 'short-cuts'; but they are such simply because these underlying 'mental states' do not belong to the things thought about to whose rise in consciousness they have nevertheless contributed. In explaining the status of universals, therefore, it profits us to pay little heed to their transmission, analysis of which has its own uses, but no logical ones,—and still less to metaphysical implications about the transmitted things.

After so much destructive criticism one has a right to ask what can be offered as a positive theory of universals to supplant the ultra-psychological interpretations. Such a theory must be developed elsewhere, but it may be faintly forecast here with the remark that a careful study of what we really mean by a 'thing' reveals, on the one hand, a 'center of function' (somewhat as Lord Kelvin described the molecule); and as a result of such an interpretation we find that what we call individual objects in space are primarily the true 'ab-

stract universals,' being the 'effects' of countless simpler objects which a misleading terminology has labeled 'mere sensations,' 'feelings' and the like. If this forecast rings riddlesome here it is probably because the fallacies of conventional psychological language have not been appreciated. But that it is the consistent implication of modern empiricism, I have little doubt.

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REVIEWS AND ABSTRACTS OF LITERATURE

Logic, Deductive and Inductive. JOHN GRIER HIBBEN, Ph.D., Stuart Professor of Logic in Princeton University. New York: Charles Scribner's Sons. 1905.

The task of preparing a modern text-book in logic lays under large contribution the resources of the historical and scientific as well as of the philosophic spirit. To rehabilitate what remains of the traditional formal logic that is worth preserving and handing down to another generation, to search out and to systematize essential methods or tools of scientific procedure, often employed as they are almost unconsciously and in fields remote and technical, and finally, to bring home to the student a fruitful conception of the philosophical significance of logic, a realization of its catholic scope and abiding interest as an inquiry into the dialectic, the drama of thought itself—these are concerns which the maker of a text-book on logic may be expected to reckon with. This much, at least, must be said in appreciation of the many-sided and comprehensive treatment which logic has received at the hands of Professor Hibben in his book on 'Logic, Deductive and Inductive.'

It would be difficult to think of a logical topic of any importance that does not receive attention in these pages. The reader renews acquaintance with the ancient forms of traditional logic and observes with interest how greatly some of them have been rejuvenated by the garb of modern instances and unworn illustrations. The author is to be congratulated on the success with which the 'stock examples which have grown old and infirm in the service of many generations of students in logic,' to quote from the preface, have been eliminated, and their places supplied by illustrations and examples 'taken from the sphere of every-day experiences, in order that they may represent modes of actual reasoning pursued by the common run of mankind.' It has been the aim of the author, we also read in the preface, 'to present in connection with the more formal and traditional treatment of the deductive logic also some considerations which have been contributed by the discussions of the modern logic and which find expression in such works as those of Sigwart, Lotze, Erdmann, Green, Bosanquet, Venn and others.'

The book, as a whole, consists of two parts, the Deductive and the Inductive Logic. The latter part is a revision of the author's 'Inductive Logic' which was published in 1896.

Part I., the 'Deductive Logic,' opens with a series of chapters on the nature of thought, the concept, and the judgment. The wisdom of dwelling in advance and at some length on the nature of thought is easily apparent, although the definition of thought laid down at the outset be confessedly incomplete, if not unduly one-sided and abstract. "Thinking . . . may be defined in one of its aspects at least as the process of interpreting the special by the general, or the new experience by the old" (p. 4). True, inasmuch as 'thinking' is to be the subject-matter of the whole book, it may well be let off with a very incomplete account of itself in the first chapter. But stripped of its antecedents and occasions, broken off short on its stem, it presents, in spite of a suggestive illustration which I have not the space to quote, a rather limp and devitalized appearance, as if chilled by the rigor of the severely logical atmosphere into which it has been suddenly thrust. It is considerably thawed out and revived, however, through well-chosen illustrations in the immediately following discussion of the four functions involved in reflection: (1) The formation of concepts out of the 'crude data of knowledge furnished by the senses.' (2) 'The reduction of the total mass of concepts to some kind of systematic order.' (3) Interpretation—the referring of the object of thought to its appropriate concept. (4) Inference—the process of unfolding what is implied in judgments.

In these introductory chapters judgment, of course, is given the central place. It is made clear that the concept can lead only an empty and precarious existence unless employed in the act of judging, in the act of qualifying, or interpreting, some object of thought, whether perceptual or conceptual. Considerable space is devoted to the drawing of distinctions between the empirical and the logical concept, emphasizing the growing loss of particularity on the part of the latter, its freedom from dependence upon any mental picture to make it clear and intelligible, its tendency to progressive differentiation, and its highest development in the form of a constructive principle, or true scientific concept. No constructive function is ascribed to the logical concept in its lower, more nearly empirical form. We are told that this higher order of concepts in virtue of having a constructive function is radically distinct from the other orders. But is not this failure of the logical concept to come into its own until so late in its career due not to its earlier proximity to empirical concept, but to its artificial isolation from it?

Berkeley's contention, that the loss of particularity on the part of the concept tends to reduce it to a dead and empty form, is answered by Professor Hibben in a way that recalls Mill's famous definition of matter. "The particular attribute of color, or of form, or of habit is indeed dropped out of mind in framing the concept, but there is always a compensation for the loss of the particular by substituting in its place the possibility, not only of the attribute in question, but all others of the same general kind. Instead of the particular we have the potential which admits of an indefinite degree of variation. Thus the concept of a rose admits of any shade of color whatsoever which is compatible with

the whole range of experience regarding roses" (p. 17). In other words, the concept is, among other things, a sort of permanent possibility of images, as matter—according to Mill's definition—is a permanent possibility of sensations.

The various types of judgments—universal, singular and negative—and the varieties of judgment forms—categorical, hypothetical and disjunctive—receive ample description and illustration. It is worth noting that the latter are treated genetically as various stages in the progress of knowledge. The discussion of division and classification is enriched by the presentation for comparison of Bacon's classification of human knowledge and Comte's and Spencer's classifications of the sciences.

This brings us to an important chapter on the nature of inference. Professor Hibben undertakes to maintain throughout his treatment of inference a sharp distinction between the psychological and the logical, between inference as a psychical experience, as something going on in some one's mind, open to observation and description, and inference as having validity, warrant, ground. The chapter opens with a very brief but admirably clear statement of the psychology of inference as rooted in the perceptual processes. Soon the question of the objective validity of these processes arises. The shade of Hume is invoked. Refuge is finally sought in 'the fundamental postulate of knowledge which we are constrained to assume, namely, that our consciousness must be self-consistent throughout' (p. 90), and in the assumption that the data of consciousness contain *within themselves* that which enables the mind to transcend them. In two or three places in this chapter the distinction between the psychological and the logical shows signs of becoming a division of labor rather than a barrier, but one dare not urge this point very far, lest it turn out to be a case of 'subjective necessity' rather than a case of 'objective validity.'

Most of the remainder of the deductive part is taken up with explanation of the more typical aspects of formal logic, the 'laws' of identity, contradiction, excluded middle and sufficient reason, the various transformations of the judgment forms, the syllogism with its mood and figure. There is a chapter on extra-syllogistic reasoning, and one on fallacies. It is an evidence of a very high order of ingenuity that the author should have succeeded in squeezing out of the various combinations and permutations of *A, E, I, O* two practical suggestions, one of them aimed against hasty generalization, and the other a useful rule in debate—'never attempt to prove more than is necessary to overthrow your opponent's main contention' (p. 109).

Part II., the 'Inductive Logic,' is introduced by a discussion of the relations between induction and deduction, in which it is made clear that Professor Hibben desires the student to understand thoroughly that the two are mutually dependent. The premises of deduction are not given ready-made, but must be constructed by us through our interpretations of reality. Mr. Bradley's argument that there can be no such thing as induction, because it always rests on an implied universal which gives to

the process as a whole a deductive character, is taken by Professor Hibben to have the force 'only of proving that induction can not be independent of deduction' (p. 173). A chapter is devoted to each one of Mill's five inductive methods. Under predication and verification the author treats of the tendency of laws or generalizations reached through inductive processes to become anticipatory. Thus science escapes the bounds of Baconian induction. It is largely through these anticipations that the progress of science is attained. The chapter following is naturally, one might say logically, devoted to the hypothesis. The double function of the hypothesis is clearly brought out—how it functions preliminary to experiment as a selecting agency, and how it functions subsequent to a problematic occurrence as an explanatory, unifying agency. It is noted how large a part is played by the imagination in the development of a hypothesis, Tyndall's thesis to this effect in his discussion of the 'Scientific Use of the Imagination' being well illustrated by quoting an instance of one of his own scientific explanations. Following the chapter on the hypothesis is a chapter on analogy, in which the important rôle analogy has played as an instrument of discovery and of classification in scientific research is made clearly evident, and five requirements of true analogy duly set forth. Corresponding to the discussion of extra-syllogistic reasoning in Part I. is a discussion, under the head of probability, of cases that are so complex that they can not be subjected to the ordinary inductive methods. Inductive fallacies are comprehensively discussed under the four rubrics of errors of perception, errors of judgment, errors of the imagination and errors of the conceptual processes. They are characterized as 'due to the psychological disturbance of our normal logical processes.' We are told that the chapter is devoted to the pointing out of errors that are mainly psychological in their origin, for two reasons. First, because the data of inference are psychological as regards their source; if observation and sense-perception be contaminated, all the subsequent processes of hypothesis, classification, etc., will suffer accordingly. Second, fallacies that are formal are not so apt to mislead. 'In the material data especially lurk the germs of fallacy.'

The book closes with a chapter on the inductive methods as applied to the various sciences, and with a historical sketch of induction, which goes back to Socrates, Plato and Aristotle, and which contains brief accounts of the logical significance of Roger Bacon, Da Vinci, Telesius, Campanella, Locke, Newton, Herschel and Whewell, as well as of Francis Bacon and John Stuart Mill. A list of nearly two hundred brief logical exercises is appended. Special mention should also be made of the abundant and interesting illustrative material in Part II., much of it drawn from the experimental sciences and adding not a little to the teaching value of the book.

The function of the book is clearly to serve as a comprehensive textbook or manual, a museum of the past and a field survey of the present. So completely has this function been fulfilled, so close and faithful is its exposition, especially of the present position of what is commonly re-

garded as logical theory, that the book has more than a pedagogical significance. It has succeeded so well that it can hardly fail to challenge criticism, the criticism of that which it has exposed.

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The Color Sensitivity of the Peripheral Retina. JOHN WALLACE BAIRD.
Washington: Carnegie Institution. 1905. Pp. 80.

This paper commences with a summary of the experimental work done on the sensitiveness of the retina to color, which may be called as good as perfect. It is concise and gives the gist of each of the experiments in their chronological order and with careful references to the original places of publication. Two general conclusions can be drawn from this mass of work: "All colors tend to assume a yellowish or a bluish tint as they approach the periphery; yellow and blue do not themselves change in tone, but the less refrangible end of the spectrum—the reds, the oranges and the greens—together with the more reddish purples, appear more and more yellowish as they recede from the visual axis; while the more refrangible end of the spectrum—the violets—together with the violetish purples, pass over into bluish or even blue, at but a slight distance from the fovea. . . . The saturations of all color stimuli appear to diminish gradually and steadily, from the fovea to the outer limits of vision; in addition to the yellow and the blue, a certain tone of red and a certain tone of green undergo no change of color in indirect vision." The three experimental papers, by Bull, Hess and Hegg, which have observed all the necessary precautions, show, furthermore, that 'the retinal sensitivity to a certain red is coextensive with that to a certain green; the sensitivity to a certain yellow is coextensive with that to a certain blue; the former pair of color zones is much narrower than the latter pair.'

It seems also well established that all the color zones increase with an increase in the saturation, area and intensity of the stimulus. In fact, "the more recent workers at least, are of the opinion that even the peripheral retina is not, strictly speaking, color-blind. Its 'color sense' may be so weak that a relatively strong stimulation is required to call forth the whole manifold of sensation qualities which it is capable of furnishing; but that it may, under appropriate conditions, furnish the same quality series as the more acute central regions is no longer doubted." This should seem to bear interestingly on von Kries's theory of peripheral vision, and Baird does not hesitate to say that 'it seems evident throughout that the behavior of the eccentric regions of the retina has given von Kries an endless amount of trouble; and his own discussion shows that his theory is wholly inadequate to account for the phenomena in question.'

The experimental portion of Baird's paper deals with two questions, the chromatic character of the sensation aroused when a constant color stimulus is applied successively to different regions of the retina, and the relative extension of the retinal areas within which the tones of the different color stimuli are correctly recognized. The list of the various

changes in sensation aroused by the various color stimuli in passing from the fovea to the periphery is too long to give here, but Baird concludes that 'if the stimulation be sufficiently intensive, all colors may be recognized at the extreme periphery.' It was incidentally found that a peripheral stimulus applied constantly and continuously gives a sensation which is by no means constant, but decreases in saturation and frequently changes in color tone as well. These changes are tabulated. Previous stimulations of which the after-images have entirely lapsed may, nevertheless, modify the color tones of succeeding stimulations.

Baird rightly insists that any determination of the relative extension of different retinal zones is worthless unless such colors are used as do not change in tone while they move from the fovea to the periphery (*i. e.*, are physiologically stable); and especially such as are equal in intensity and in saturation. "The equating of the white-values was accomplished by comparing the brightness of the gray sensation aroused by each upon the peripheral retina." The quality of color values was insured by the particularly clever device of mixing these colors, already white-equated, on a color disk and changing the color values until the mixture was a perfect gray. If then a white-value was found to have been altered it was corrected, and the process repeated until by successive approximations four colors were obtained (red, yellow, green and blue) which were equal in both intensity and saturation. "Eight half-meridians were explored," and "the results show that the zone of stable red is coextensive with that of stable green, that the zone of stable yellow is coextensive with that of stable blue, that the yellow-blue zone is much more widely extended in all directions than is the red-green zone."

The experimental work seems to have been done with admirable care and the paper is written up with that conciseness and excellence of style that have characterized such of the publications of the Carnegie Institution as have come under this reviewer's eye.

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Psicologia Fisiologica. G. MANTOVANI. Milan: Ulrico Hoepli. 1905. Pp. 175.

We have here what is seldom attempted, a real primer of physiological psychology. Naturally the book can have value for few outside of the Italian public, but for Italians who want to find out what sort of a study modern psychology is, this tiny manual should be excellent. It is extremely elementary, of course, but surprisingly solid for a book of its size and purpose. The author in his preface to the first edition (1896) regrets that psychology is little cultivated in Italy, and that the public is either unaware that such a study exists or has a wholly mistaken idea of it. Dr. Mantovani hopes only to spread a little the true notion of the experimental study of mental facts, and to incite some to the reading of larger books. As psychology in Italy is to-day far from negligible, and as a second edition of this little book has been called for after nine years, it may have had its measure of success.

Any foreigner who for the sake of his Italian wants a psychological reading-book may take this. The style is clear, and the doctrine, what there is of it, sound.

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Identität und Gleichheit mit Beiträgen zur Lehre von den Mannigfaltigkeiten. KURT GEISSLER. *Zeitschrift für Philosophie und Philosophische Kritik*, Band 126, Heft 2, pp. 168-188.

The question of the significance of the law of identity $A = A$ is here treated with reference to the writer's previous investigations in the field of mathematics. Although the latter are, strictly speaking, outside the realm of pure logic, they may, nevertheless, prove of assistance in determining the vexed question of identity. The identical equation in mathematics $A = A$ is the equivalent of $A - A = 0$, and accordingly the problem of the meaning of identity is closely connected with that of the meaning of zero. According to the theory of the *Weitenbehaftungen* both zero and the mathematical point are relative terms. For instance, the tangent of a circle has an infinitely small portion in common with the circumference. For the finite or sensible *Weitenbehaftung* this distance may be neglected, it is a point, but for the lower *Weitenbehaftung*, that below sense perception, it is a definite distance, comparable with other distances and no more to be neglected in an estimate of spatial relations than is the circle's circumference in the field of the finite. The same thing is true of the higher *Weitenbehaftung*, that of the infinitely great. Here finite distances become points of no spatial value. The doctrine of relativity holds for numbers as well as for space. Zero is the expression of a quantity which is by no means the equivalent of nothing, but which, belonging to a lower *Behaftung*, is incomparable with the others with which it is used, and so may be ignored in equations.

The conclusion, though not definitely stated, is evident. If the mathematical point and zero are both relative conceptions, denoting quantities which in the case in question may and must be ignored but which are no less existent than the sides of a triangle or the number ten, then the law of identity, which is capable of mathematical expression, must be also relative. Possibly logic, like mathematics, deals with different *Behaftungen*. The suggestion is an interesting one and it is to be regretted that the author has employed such brevity with regard to the philosophical applications of his mathematical doctrines.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE, July, 1905, Band 39, Heft 1 u. 2. *Experimentelle Beiträge zur Psychologie des Schlafes* (pp. 1-41): WILHELM WEYGANDT. — A determination of the capacity for mental work, as meas-

ured by addition and memorizing, after various periods of sleep. For the performance of practiced work, such as addition, a half hour's sleep gives full restoration. For more difficult work, such as memorizing, a longer period of sleep is necessary. The restorative effect of sleep is, in the case of difficult mental work, proportional to the duration of it. *Das Augenmass bei Schulkindern* (pp. 42-87): HERMAN GIERING. - The chief result of this study is the absence of improvement in eye-measurement in children of school age and even in many cases from the age of three. Boys appear to be superior to girls. In general children from six years and upwards are subject to the same illusions as adults. When experiential data are excluded differences of depth are not distinguished in monocular vision. *Ueber die Bleichung des Sehpurpurs durch Lichter verschiedener Wellenlänge* (pp. 88-92): W. NAGEL und H. PIPER. - Experiments on the retinae of owls and frogs showed that the series of colors produced in the bleaching of the visual purple is unaffected by the wavelength of the bleaching light. No support found for Kühne's assumption of a visual yellow. *Dichromatische Fovea, trichromatische Peripherie* (pp. 93-101): WILIBALD NAGEL. - Description of a case of green-blindness of the fovea with trichromatic peripheral vision. It goes to show the unsatisfactoriness of the Holmgren test which proved ineffective in disclosing the defect. *Ueber die Verlegung der Netzhautbilder nach aussen* (pp. 102-110): A. E. FICK. - Outward projection of a single luminous point in a dark visual field is extremely inexact, contrary to usual assumptions. Literaturbericht.

Adler, Felix. *The Essentials of Spirituality*. New York: James Pott & Co. 1905. Pp. 92. \$1.00.

Hegel. *Encyclopädie der philosophischen Wissenschaften im Grundriss*. Edited by Georg Lasson. Leipzig: Darr. 1905. Pp. lxxvi + 522. 3.60 M.

Lagerborg, Rolf. *Das Gefühlsproblem*. Leipzig: Barth. 1905. Pp. vi + 141.

Lukas, F. *Psychologie der niedersten Tiere*. Vienna and Leipzig: Braummüller. 1905. Pp. 276.

NOTES AND NEWS

THE experiments of Professor Burke in artificial biogenesis (see the *Fortnightly Review* for September) emphasize the revolutionary nature of much of the progress in present day biology. Commenting on these experiments, the *Medical News* notes investigations and results of other workers in the same field. Bütschli was able to obtain combinations which showed activities much like those of protoplasm. Artificial emulsions showed a microscopic structure almost identical with that of protoplasm; oil emulsions suspended in water showed ameboid changes of form. Quincke's experiment is classic. He suspended in water a drop of almond

oil and chloroform, and then by means of a capillary tube caused a drop of a two per cent. solution of sodium carbonate to approach the globule. The latter exhibited movements strikingly like those of amœbæ. The latest of these attempts has been made by Stephane Leduc who produced an artificial cell showing growth and germination. In a solution of copper sulphate he suspended a drop of saccharose solution containing a trace of ferrocyanide of potassium. The drop was soon surrounded by a thin membrane of ferrocyanide of copper. This membrane was permeable to water, but not to sugar. The result was that the drop imbibed water and increased in size. It was also seen to put out prolongations similar to the pseudopodia of amœbæ. As soon as the surface tension of the drop exceeded the internal cohesion, self division occurred, and each resulting half surrounded by a new pellicle of ferrocyanide of copper began to increase in size and then subdivide like its parent drop. R. Dubois, of Lyons, has recently observed bodies similar to the radiobes, to which he has given the name 'vacuolides.' Professor Loeb has shown that fertilization can be artificially brought about and the actions of bodily ferments have been closely imitated by the various metallic enzymes. The *Medical News* concludes its comment as follows: "About ten years ago the world was startled by the announcement from the chemical laboratory of Professor Moissan, of Paris, that the latter had succeeded by means of high pressure and the intense heat of the electric furnace in manufacturing diamonds from amorphous carbon. Although too small to be of great commercial value, the diamonds thus produced were no different from those dug out of the earth. Moissan had merely imitated nature's own process. With the same agent at his disposal, namely great heat and pressure, he succeeded in producing on a small scale the remarkable metamorphosis of carbon which nature, on a larger scale, had accomplished in her vast terrestrial laboratory. With a slight stretch of the imagination one may compare the researches of Burke with those of Moissan. Employing a source of energy which is known to have existed at a time when the earth was gradually cooling from its incandescent state, namely radioactivity, and which may have participated in the transformation of the lifeless clod into the pulsating organism, he has imitated nature's handiwork. The radiobes of Burke may thus be regarded as bearing the same relation to the non-living compounds of the sterilized bouillon that the diamonds of Moissan bear to the pieces of structureless charcoal."

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THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE RELATION OF FEELING TO DISCRIMINATION AND CONCEPTION

IT is a common theory that for purposes of explanation mental processes may be reduced to two classes of elements, sensation and affection, of which the sensation class, at least, is considerable in number. Two difficulties are at once apparent. In the first place we have little right to assume a manifold of elements. Secondly, to treat sensation and affection as coordinate classes of elements is no solution of their relation to each other.¹ My belief is that feeling is not coordinate with sensation, but is the common ground between any two sensations. It is the generic or unifying principle of consciousness to which sensation is subordinate, and is, therefore, the really elemental aspect of mental life.

There can, logically, of course, be only one final element, since opposites always have common ground. The criterion of an element is simplicity and unanalyzableness, and the limit of analysis is pure and simple quality. The view which adopts a manifold of initial qualities leads eventually to the Münsterberg² theory of psychical atoms. This theory argues that a psychical atom can never be given in immediate experience, and is not measured by time space and intensity. Each atom, however, is perfectly unique and dissimilar from every other; for if the atoms had any resemblance one to another they must of necessity be composed of parts (since similarity means partial identity). Each atom is, then, a unique quality. The objection is that an atom can not be simple and at the same time dissimilar from a great many other things. A many-sided dissimilarity means a highly differentiated organization; if we have a thousand objects each differing from every other, we must have within each

¹ Cf. Titchener, 'Outlines of Psychology,' chap. 9, p. 214: 'The feeling stands on the same level of mental development as the perception or idea'; p. 219: 'The emotion stands upon the same level of mental development as the simultaneous association of ideas'; p. 233: 'The mood stands upon the same level of mental development as the train of ideas.'

² *Psy. Rev.*, Vol. VII., p. 1.

one of them nine hundred and ninety-nine grounds of distinction. Any added point of difference is an added point in inner complexity. Pure quality is for consciousness a homogeneity, not a plurality. The mental element in this sense is equivalent to James's blooming, buzzing confusion, to Ward's³ continuum, to Stanley's⁴ primitive inarticulate pain, to Horwicz's⁵ elementary feeling process.

The form of consciousness which answers to the logical demands of an element is emotion or affection.⁶ Affection or feeling I should define as pure quality, a thing homogeneous and devoid of internal relation, every part of it interchangeable with every other part, a simple identity. The following considerations are offered in support of the idea that feeling is a state of indiscrimination, that its content is homogeneous. (1) Popular usage has it that one is 'confused or perturbed by emotion,' 'blinded by passion,' that 'pity melts and feeling sweeps over us,' that 'love is the leveler of distinctions,' that 'the sympathy by which we put ourselves in the place of others is simply the obliteration of the difference between ourselves and others.' (2) Introspectively feeling for a given thing is simple and unanalyzable as compared with the perception of that thing. When I feel that I can play a certain musical composition that feeling is perfect and complete, though it should last only an instant; but when I perceive that I can play, the operation takes several minutes packed with the apprehension of tones and their sequences, times, intensities and harmonies. In the feeling of mastery I am not conscious of the number of times I have practised, nor of how the individual notes run, nor of all the muscle flexing which is required. The feeling is the simple undercurrent which would accompany the words 'I can play that.' (3) Feeling is our ultimate measure of values and as such must be homogeneous in content. Suppose a man slightly afraid to walk down a certain dark street. He will grasp his cane more tightly and go on. But if he is very much afraid he will go another way. The objective results of these two states are qualitatively disparate, but the meaning of the results can be compared by reference to the two states of feeling which were qualitatively alike but quantitatively different.

Another way of stating our definition of feeling is to call it the continuity of consciousness. The postulate of continuity we may express in this way: no two things can exist in consciousness so totally different but that some common ground may be found between them,

³ Art. 'Psychology,' *Encyc. Brit.*, p. 45.

⁴ *Phil. Rev.*, Vol. I., p. 433.

⁵ *Psychologische Analysen*, Bd. XIV., p. 351.

⁶ I use feeling, affection and emotion interchangeably because I believe them to have the same function.

and no two things are so nearly alike but that we can imagine some point between them which would partake of the nature of each, *i. e.*, we recognize always the possibility of still finer discriminations than the ones which we at any time make. In Stout's language, "We have not merely *A* and then *B*, but also the passage of *A* into *B*; and this passage as such is a modification of consciousness. The transition is itself an experience."⁷ It is feeling which effects this transition, which is the continuum of thought. What, then, is its relation to the dividing and combining activities of mind to discrimination and conception? I shall consider here the relation of feeling to discrimination, reserving the consideration of its relation to conception for a subsequent paper.

The discernment of difference is frequently pronounced the most fundamental act of consciousness.⁸ Concerning what takes place in the process of discrimination most writers have been content to say that there is an analysis or singling out of parts in a whole. There have, however, been attempts at a more elaborate treatment. Sully, for example, tries to separate discrimination from differentiation by making differentiation a preparatory stage for discrimination. He says: "*A* and *B* must be presented and noted as two distinct impressions before we become conscious of the relation *A-B*. This applies to all intellection as a relational and relating process. The mental apprehension of a relation of difference, likeness or succession in time must be carefully distinguished from the experience of having two unlike, like or successive impressions."⁹ The same idea appears in Wundt: "The erroneous view still finds frequent acceptance that the existence of psychical elements and compounds is the same as their apperceptive comparison. The two are to be held completely apart. Of course, there must be agreements and differences in our psychical processes themselves, or we could not perceive them; still the comparing activity by which we perceive is different from the agreements and differences themselves and additional to them."¹⁰ I am inclined to add one more acceptance of the 'erroneous view.' Surely in psychology, if anywhere, the 'being' of a thing is its 'being experienced.' What can a change in consciousness be which is not also a consciousness of change? Külpe's words settle very well with this idea: "The phrase 'sensible discrimination' must not be taken to

⁷ 'Manual of Psychology,' Bk. I., ch. 2, sec. 2.

⁸ Bain, 'The Senses and the Intellect,' 3d ed., p. 321. Sully, 'The Human Mind,' Vol. I., chap 4, sec. 3. Spencer, 'Principles of Psychology,' Vol. II., chap. 24, sec. 371. *Ibid.*, sec. 373. *Ibid.*, chap. 25, sec. 374.

⁹ 'The Human Mind,' Vol. I., chap. 7, sec. 3. *Ibid.*, footnote.

¹⁰ 'Outlines of Psychology,' Pt. III., sec. 17, par. 6.

denote a faculty of comparison, in the sense of a peculiar conscious process existing alongside of the various contents."¹¹

There are two especially noted discussions of the way in which the consciousness of change comes about, those of John Stuart Mill and Professor James. In Mill's experimental methods for the selection of the cause of a given effect we have four or five groups of circumstances in which the same principle may exhibit itself. The selection of the 'sole invariable antecedent' is the problem. But when we are told to regard as the cause that which is always present when the effect is present (and absent when it is absent) we must presuppose several already distinctly discriminated antecedents, that is, we must have some pretty definite preconception of the possible causes or antecedents before we could know whether any one were always present. Mill's methods would apply, therefore, only to specially arranged cases. James attacks the question in the two complementary phases of 'dissociation by varying concomitants' and 'association by partial identity.' Each of these formulas, in spite of its value from a descriptive point of view, seems inadequate as an explanation, since it is expressed in terms of that which it purports to explain. In the 'varying concomitants' the discriminations which we wish to know about are already given. The variation is the question. In 'association by partial identity' it is the partition which is the object of the inquiry.

In every case of discrimination there are two aspects of consciousness, a 'this' and a 'that.' It is often tacitly assumed that these two members of the discrimination are coordinate particular impressions, and that what we distinguish is one particular thing from another particular thing. To this understanding of the matter I venture to take exception. We do not discriminate from particular to particular, but from the general to the particular. It is a singling out or distinction of one point from all others, a dichotomy of which one term is the object and the other is a vague feeling which is a generalization of all possible other things. Discrimination is always for something as against something else, and the two terms are never equal. This process appears as a change from the general to the special, or from the felt to the clearly perceived. It is illustrated by the familiar experiments which deal with least discernible differences. We may feel that two tones are different, but be unable to say which is higher; two grays feel different, but we can not tell the lighter; something moves on our skin, but we do not know the direction of movement. In all these instances the general experience precedes; we know that one gray is lighter than another before we know that

¹¹ 'Outlines of Psychology,' Pt. I., chap I., div. 5.

this gray is lighter than that. Again in waking from sleep, no matter what the stimulus that aroused us, it seems that we feel first the general excitation of being awake before we realize any particular sensation. "The first appearance of a deluded belief," says Mercier, "is always strongly associated with either pleasure or pain. It is always the constituent of an emotion."¹² In voluntary discrimination, as when one is required to tell the difference between two tones, the first condition is the anticipatory imagery, and this imagery is necessarily vague and general. We can not anticipate precisely what we are going to hear, we only know 'about' what it will be. This knowledge about is the diffused excitement which is called a feeling for the thing.

It follows that feeling may be looked on as an instrument of control over discrimination. Although it is said that we can govern our thinking better than our feeling, the fact seems to me just the reverse. We can work up ideational excitement, but we can not compel perception. It is easier to expect a thing than to get it. We can melt up the wax, but the impression has to be given. An emotion is more accessible to control than an idea because it is commoner. It is largely made up of muscular stimulation and that is the very source of experience over which we have most immediate command. As an athlete who wishes to make a quick or fine reaction first warms up his general excitability, so the would-be discriminator must excite some feeling or general susceptibility to his subject.

Through the medium of this common excitement transitions take place from one special object to another. The reabsorption of the particular into the general—the result of fatigue perhaps—is the middle term to the appearance of another particular. All comparison between particulars must be mediated by a common denominator. There must be some reduction to a common effect or else the comparison of one sensation with another can have no meaning. Now, in comparing a somber color to a low tone, we do not hesitate to say that the common effect is a certain feeling; and when Shelley compares a skylark to a cloud of fire we hasten to explain by emotional congruity. Why, then, may we not consistently define the mean between any two extremes as the emotional or affective element in our situation, and admit that while we are discriminating a blue from a green with attention now on one and now on the other, we are moved by a blue-green emotion?

Such an understanding would agree with the view advocated by Külpe, Titchener and others that the variety of our intellectual content is contributed by the sensational part, compared with which the

¹² 'Psychology Normal and Morbid,' p. 479.

affective elements are most meager. Only, it would hold that feeling is relatively, rather than absolutely, simple. Our view would also agree with the theory of Wundt and others that there are many different feeling qualities; for since no two situations are exactly alike there is an opportunity for many different middle terms. In any given moment of consciousness, then, the homogeneous aspect, the middle ground, is the feeling aspect; but in retrospect these homogeneities need not be, indeed, are not, the same.

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THE REAL AND THE PSEUDO PSYCHOLOGY OF RELIGION

THE psychology of religion, unfortunately for its development as a science, has become somewhat of a fad. It is the thing, now, for theological schools to offer courses upon the subject, and, in various ways, a deal of more or less wild discussion, so labeled, is bandied about and occasionally appears in print. Much of it is obviously mere philosophizing about religion, and is as remote from genuine psychology as can well be imagined. It seems to be an attempt to utilize in a very external way some common psychological terms in the restatement (we shall not say explanation) of the concepts of the religionist. The psychology of religion has too often been undertaken from a religious point of view with the evident intention of giving religion a sort of pseudo-scientific dignity. In fact, a little going over of the field of what to-day claims to be the psychology of religion must render it manifest that we are not yet beyond the stage when terms must be defined and the nature and scope of the subject-matter more carefully determined.

Two or three elementary principles must be clearly grasped by any one who aspires to be a psychologist of religion. In the first place, one must not take for granted the concepts of the religionist and use them along on the same level with psychological terms. All such concepts as God, divine life, or larger life, conversion, etc., may be assumed to stand for some facts of experience of the religious mind. It is the business of the psychologist to determine what these facts may be and restate them in psychological terms, not use them unanalyzed and in their popular sense.

For another thing, the psychologist must be able to distinguish a psychological statement from a metaphysical one, or a statement of fact from a vague philosophical generalization.

With the first of the above principles in mind, the psychologist will see that the various conceptions of religion grow out of certain valuational attitudes in religious individuals. This is entirely aside from the question of their objective truth or falsity. The mere fact that they are beliefs of some people means that there is something in the experience of these people which these concepts stand for, or symbolize. But while these concepts refer to facts of experience, it is important to note that they are not facts which belong to the same species as perceptions. The religionist may say that he perceives God as clearly as he does a house, but he speaks popularly and not scientifically. What he really means is that he is conscious of a certain value in his experience, a value which is as vivid to him, so he thinks, as the perception of an external object. The metaphysician and the practical religious individual may quite believe that God exists as an objective fact, and they may offer proof that is to them convincing. Psychologically, however, God is not perceived, nor can the divine mind be regarded as something in some way continuous with the experience of the psychologist through its subconscious phases. God may be an existing fact, but even the religious man would hardly claim that his deity was a phenomenon, and hence capable of statement in phenomenal terms. If there is a divine mind, its relationship to the human mind can not be expressed in any spatial or temporal terms, nor in terms of cause, nor in any other thought category. In other words, however the naïve mind may choose to symbolize that relationship, it is not a relation of which psychology can take any cognizance. As far as psychology is concerned, the deity may be said to be a value attitude of a certain kind in the consciousness of some individual or individuals.

The following considerations will make this point of view clearer. Experience as it comes to us, or as we have it, is not merely an epitome of seemingly objective facts. The so-called facts of our experience come to us with a color; they have a certain appeal to us. In other words, the stream of consciousness has its values as well as its images, its ideas and its perceptions. Religion may be said to pertain to the value side of experience. In religious dogmas, concepts, objects of faith, deities, etc., the religionist states in objective terms what experience means to him.

One of the objects of the psychology of religion is to trace the development of these religious values out of the simpler types of value attitude, and to state in terms of the rest of experience the counterparts of such objective expressions of value as God, immortality, faith, the divine life and the like. In other words, if psychology is concerned with a description of the facts and laws of consciousness, and if the psychology of religion is a subdivision

of this more general science, it deals, simply, with a certain portion of the conscious contents and activities which are the subject-matter of general psychology. It must state in the accepted language of psychology the nature of those conscious states which are called religious.

This brings us specifically to the second point, referred to in the beginning of our discussion. Psychology has to do with the content and the dynamics of the *individual* mind. To be sure this end can be attained only by taking account, for one thing, of stimuli of various kinds, especially of social stimuli, but in no case does this fact render it legitimate to assume that there is an over-soul or divine life of which the individual is a part. It may be legitimate for philosophy to speculate regarding such a state of affairs, but the whole question is one which is at least not psychological.

The psychologist has given, we repeat, an individual consciousness capable of being modified by various stimuli, but it is not, as far as he is concerned, a part of a larger life, either social or divine. As far as the individual consciousness is concerned, these are simply terms which symbolize immediately experienced values of various kinds. As we have already suggested, it is the business of the psychologist to endeavor to state the objective conditions under which these value attitudes arise. This is true, whether the value be esthetic or religious. It should be evident, however, that these conditions can not be explained through the use of the value terms themselves. Thus the consciousness of esthetic value is not by any means accounted for by saying that the person perceives a beautiful object. So also the religious consciousness is not explained by the statement that the soul in some way perceives, or is cognizant of divine values. We maintain that *both the esthetic and the religious consciousness are constructions, and the so-called objects of these types of consciousness are their products, as far as psychology is concerned, rather than their stimulating causes.*

The above considerations suggest the type of objection we should urge against such a statement as the following: "If there is a divine life over and above the separate streams of individual lives, the welling up of this larger life in the experience of the individual is precisely the point of contact between the individual person and God. The organizing center for religious as well as social life lies beyond the boundary line of the merely individual consciousness."¹ This is a pseudo-psychological explanation of the experience of con-

¹ 'The Psychology of Religion,' J. D. Stoops. This JOURNAL, Vol. II., p. 512. This paper is not an attempt to criticize the article referred to and except where explicit reference is made to it, I do not have it in mind, except in a general way.

version. If we translate it into genuine psychological concepts, the meaning implied seems to be something like this: The significance of the experience of the moment is not comprised in its bare factual presence, that is, as it appears superficially. The experience of the moment comes in a certain context of habit, its present structure is strictly relative to innumerable previous experiences of the individual. No experience can be completely described by its central fact or focus. Sometimes we are more conscious of the setting of appreciation, value, worth or significance, whatever we may call it, than at others. In popular language we may say that there is then 'the welling up of a larger life,' of a social consciousness, or of a divine consciousness, but, in the language of psychology, that which 'wells up' is an accumulation of subtle value attitudes, and habits which are definitely related to our previous experience and are developed out of it and *it only*.

In saying all this, the psychologist need not dogmatically assert that his description of the structure of experience, its contents and its values, is an exhaustive one. It is quite likely that every fact of consciousness means more in the ultimate constitution of things (whatever that may be) than we can ever state in our descriptions, but as far as psychology has anything to say about it, the description is complete when it has been made in terms of the experience of the individual, taken in its entirety, and not as a fact of the present moment. In the ultimate constitution of things this may be the contact of the individual person with God. The broader relationships of the present moment may be so vivid in consciousness, their significance for the life as a whole may be so great that they may merit the objective symbol of *divine* or of *God*, but from the point of view of science *the experience is still a 'value attitude'* arising as an organic part of the stream of consciousness of the individual.

Such statements as that above, to the effect that the subconsciousness of the individual is continuous with the consciousness of society or a divine consciousness, are metaphysics or guesswork; at any rate they are not psychology. If conversion is the rising up of a new center out of some subconscious region, it is at most a reorganization of one's life by taking into account its broader meanings and values as these are present in consciousness in the form of emotional attitudes sublimated from previous experience.

The writer quoted above makes much of the automatisms of conversion and of their supposed frequency at adolescence as proving that it is the outburst from beneath of the deeper life of the race, then, for the first time, making itself felt. That conversion involves a marshaling of subconscious factors is evident enough to

any one, but that it is, therefore, 'the welling up of a race-life' is the grossest mythology. The only thing brought to light by the facts to which he points is that many adolescents are extremely suggestible, and that under a certain type of influence, such as that afforded by some of the evangelical churches, their vague impulses are, through suggestion, given definite form. The organization of one's impulses in this manner may be so striking and sudden as to seem to the subject like the bursting upon him of a larger life. It is a larger life, if it brings him to a fuller consciousness of the significance and interrelation of the facts of his experience. He may, as a result, have a better organized individuality, but it is, mind you, his *own* personality, changed in some direction or other by suggestion, rather than any racial life showing itself.

Discussions of conversion, such as that referred to above, seem to ignore the fact that their conclusions are based on a very limited and selected type of youths, and that outside this class, that is, in the case of the average youth who does not come under a certain kind of religious teaching, conversions do not occur in any appreciable degree. How could this remarkable lack be explained according to the hypothesis we are criticizing except by the admission that in some youths the life of the race does not 'well up.' The fact is that conversion is *not* a universal nor a particularly natural experience (the question is begged, if it is urged in reply, that conversion may be gradual if not sudden, and hence may well be universal), but an induced one. The same is almost certainly true of the so-called 'storm and stress' of adolescence. We repeat that to call it the surging up of the larger life of the race is something other than a psychological statement.

The psychology of religion should, then, investigate the concepts, emotions and attitudes of the individual which are commonly called religious, interpreting them in relation to the other facts of consciousness. For the psychologist, God is not a postulate nor a factor in the production of the religious life. He is one of the concepts of some religious lives, and as such needs explanation. So of all the other objects with which the religious mind constructs or describes its universe of values.

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PANPSYCHISM AND MONISM

PANPSYCHISM appeals to our sympathies in many ways, but in none more strongly than in its claim to have given a monistic solution of the psychophysical problem. In place of the two

streams of mental and physical events, paradoxically sundered and still more paradoxically parallel, panpsychism puts a single reality mental in its nature, and of which the physical order is the symbol or phenomenon.

At the recent congress of philosophers at Geneva M. Flournoy criticized the panpsychists on the ground that the monism which they propound is methodologically useless because it is merely verbal. The puzzling duality of physical and psychical is in no way overcome by calling the one reality and the other phenomenon. From the standpoint of common sense and practical life, says M. Flournoy, we shall continue to treat mind and matter as interacting substances quite in spite of our inability to explain how interaction between two such disparate entities is possible. From the standpoint of science, on the other hand, we shall continue to treat psychical and physical as mutually exclusive but parallel streams of phenomena, and this again quite in spite of our inability to explain how two such disparate orders of events can be parallel. These two forms of dualism, with all their objections and regardless of the many refutations that have been leveled against them, continue to flourish *because they are methodological necessities* from the standpoints, respectively, of common sense and of science. The three forms of monism which would supplant these dualisms are: (1) materialism, (2) panpsychism and (3) agnosticism, or the doctrine that both physical and psychical are phenomena of an unknown substance. With these views considered merely as unproved metaphysical theories M. Flournoy has no quarrel. What he does very strongly protest against is the claim that any one of them is in any sort a remedy for the interaction paradox of the common-sense attitude or of the parallelism paradox of the scientific attitude, or in any way a mediator between these. The panpsychist does not give any satisfactory answer to his self-imposed question, 'Why has the mind a body?' because he can point to nothing in the psychical series that in any way helps us to conceive how the physical series could depend upon or originate from it.

In his reply to M. Flournoy's criticism¹ Professor Strong attempts to give a specific answer to the question which he and other panpsychists are rightly accused of having left unanswered—the question of why the mind has a body—or (to formulate the question from the standpoint of panpsychism): *How is it that minds come to attribute to one another bodies which they do not really have?*

His answer, if I understand it, runs somewhat as follows: Assume

¹ Both criticism and reply are printed in the *Archives de Psychologie*, Nov., 1904.

the system of bodiless minds in which the panpsychist believes, and assume, furthermore, that these minds act upon one another and tend to evolve ever more favorable variations. Now in this system it will be very strongly to the interest of any evolving mind to know its fellows representatively and symbolically rather than directly and as they are. And as the symbols or ideas become more efficacious they will *pro tanto* become more unlike the realities to which they refer. Thus by a kind of natural selection we should expect those minds to survive in the struggle for existence who had best attained the faculty of knowing other minds in wholly unmental terms. The physical conceptions which we actually have of the external world are seen to be precisely what would have arisen if such an evolution had actually taken place. We might add that the animistic view of nature which is held by savages and children denotes a stage of development intermediate between the primeval type of knowledge and the type of knowledge of the modern mathematical physicist. The atomistic and mechanical conception of the latter is perfectly effective for predicting and controlling nature simply because its symbols are so completely denuded of all resemblance to reality. Thus we may understand why and how it has come about that each mind appears to its neighbors to be clothed with a body and to exist as a physical object in space.

This hypothesis of Professor Strong's, of which I have here given the merest outline, should be welcomed by all panpsychists. It is a new and daring explanation of the genesis of the physical from the psychical. It appeals strongly to the sympathies of our day by reason of its use of biological categories. The experience of the physical world is a survival of the fittest. It is a useful illusion, a veil which keeps us from being blinded by a too intimate view of the souls that surround us. Berkeley, when facing the same problem which M. Flournoy presents to Professor Strong, was compelled to invoke the Deity to account for the phenomenon of purely physical ideas inhering in a purely psychical being. Professor Strong, like Laplace before him, has no need of that hypothesis—the principle of natural selection takes its place. His new theory is indeed nothing less than the Darwinization of Berkeley.

Yet with all its attractiveness this view seems to me open to an objection, which should be fatal to its acceptance. The biological principle of natural selection applies only to the *survival* of a variation, never to its *origin*. Unfortunately, the present problem is purely a problem of the origin of the physical and not at all a problem of its survival. Professor Strong's appeal to evolution would consequently seem to be irrelevant to the issue which he is called upon to meet. Supposing, however, that it is urged in answer

to this objection that all problems of origin are unsolved and that this evolutionary panpsychism is a step forward in that it is a reduction of the mind-body puzzle to a special case of a more general biological problem? I should reply that there was a profound difference between the unknown manner in which a new organic variation originates and the unknown manner in which a physical experience originates from a psychical. For the biological variation is at the worst nothing more than a new arrangement or structure of material elements which were formerly present, while the genesis of physical from psychical involves the appearance of a totally new *qualé*. What, for example, should we say to a materialist who should argue that because an animal evolved a stomach that could digest so likewise he might evolve a brain that could feel and think? Yet the same difficulty that prevents us from assenting to the view that sensation is a phase or result of molecular motion in the brain should equally prevent us from assenting to the converse statement that molecular motion is a phenomenon which has resulted from sensation. Anything that would enable us to cross intelligibly from psychical to physical would enable us to cross from physical to psychical. For these reasons I can not feel that Professor Strong's new theory is any genuine answer to the criticism of M. Flournoy. Once grant to the idealist the psychical origin of a physical experience and we can understand its development by natural selection into an elaborate system of atoms and molecules. But the whole difficulty lies in granting this first origin.

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DISCUSSION

DR. BUSH'S DEFINITION OF CONSCIOUSNESS

DR. BUSH in his 'Empirical Definition of Consciousness'¹ handles idealism in an easy, almost disrespectful way that must excite envy in those of his readers to whom the source of his confidence is not as clear as to him. Hence this note of interrogation.

Dr. Bush corrects the idealistic assumption that the subject of consciousness, the knower, is never an object of consciousness. Where a knower exists it is one among the objects of consciousness,

¹ JOURNAL OF PHILOSOPHY, PSYCHOLOGY AND SCIENTIFIC METHODS, Vol. II., pp. 561 ff.

the body, *e. g.*, or some part or action of it. And, where 'you, I and the chair,' *e. g.*, are all objects of one sensation, 'that identical chair may be your object and my object'; it is then 'essentially public.' On the other hand, hallucinations and dreams, and in part at least, I suppose, a feeling as of hunger or thirst, which are not objects in a world of experience where I and the rest of us stand in similar relations to them, these are private objects. This distinction is 'strictly empirical'; and idealism, since it is based on the essentially private character of *all* experience of objects, 'dissolves away like the architecture of dreams.'

But it seems to me that, though we grant that the subject of consciousness is ever an object also, yet when we turn to the meaning and test of the distinction between truth and error, Dr. Bush himself shows that the way to idealism and the absolute is just as open and easy as before, so long as we speak of *private objects* 'streaming' (even though they do not 'exist') in consciousness (p. 567). For when he says that 'the actual test whether my visual object be chair or hallucination would be to find whether you too see what I do,' and that 'error in science is the fact of rejection by other observers,' he starts with the existence of a private object (visual or other, mine or another's) and asks whether it be public or private only. So that, with this private object as the grammatical and logical subject of the inquiry, whatever predicate (hallucination or reality) may be found for it, to its alone existence, within the range of the inquiry, can primarily pertain. Hence may easily follow the conclusion that 'true' existence, whatever *test* we apply, *is* and means the private experience of an absolute.

Is not the distinction between private and public objects just the distinction between consciousness of an object and the object which Dr. Bush starts by rejecting? Is not my dream, in so far as it is an object, public in the same sense as the chair, though it is not studied by me and by others in the same way, while all may, if equally near, etc., study the chair in the same way?

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REVIEWS AND ABSTRACTS OF LITERATURE

La Valeur de la Science. H. POINCARÉ Paris, Ernest Flammarion. 1905. Pp. 278.

A hopeful sign for present-day philosophy and psychology is the persistence with which the common sense of the *οἱ πολλοί* is steadily creeping into the somewhat attenuated and rarefied regions of academic

thought. Emphasis even in philosophy is being placed more and more upon the scientific treatment of data, upon the tentative character of our knowledge and hypotheses, and upon the possibility of the widening glimpses which may be had in the realms of experience. To quote Tennyson in this connection,

"Yet all experience is an arch where thro'
Gleams that untravell'd world, whose margin fades
For ever and for ever when I move."

M. Poincaré well illustrates this empirical tendency in his small volume. I should hesitate to call his book 'pragmatic,' still I think that its general tendency is in that direction. It may be advisable, therefore, to orient any possible reader by pointing out the 'pragmatic' tinges in it before touching upon the contents in general. I have, in the following quotations, italicized the words that indicate the pragmatic tendency.

Concerning time and space we are told: "It is not nature which imposes them on us, it is we who impose them on nature, because we find them *convenient*" (p. 6). "The law of Newton is a truth of experience; as such, it is only *approximate*, and shows us that as yet we have only a *tentative* definition. . . . There is only one way of measuring time, which is truer than any other; that which is generally adopted is solely that which is most *convenient*" (p. 44). Moreover, any affirmations one way or the other in this connection can have no meaning *per se*. "They can have meaning, only through *convention*" (p. 46). Similarly concerning scientific rules. "We choose rules, not because they are true, but because they are the most *convenient*" (p. 57). The three dimensions of space, so-called, are not such *per se*. "Experience does not prove to us the three-dimensional character of space; rather it shows us that it is *convenient* for us to attribute three dimensions to it, because by this means any possibility of error is reduced to a minimum" (p. 125). Concerning science, we do not say that it is useful because it teaches us how to build machines. Rather "machines are useful because they do our work, and so enable us to spend more time at scientific investigation" (p. 166). To which I may add that, therefore, science is useful because it enables us to do our work in a more expeditious and agreeable manner. Our basis in all cases is experience. "The scientific fact is nothing more than the brute fact translated into more *convenient* language" (p. 231). Again, "Every law is only an imperfect and *provisional* formulation which must, in the future, be replaced by another higher law, of which, at present, we have but the roughest conception" (pp. 251, 252).

So much for these spots of light. Concerning the contents¹ of the

¹ Contents are: Part I., The Mathematical Sciences: I., Intuition and Logic in Mathematics; II., The Measure of Time; III., The Notion of Space; IV., Space and its Three Dimensions. Part II., The Physical Sciences: V., Analysis and Physics; VI., Astronomy; VII., History of Applied Mathematics; VIII., The Crisis in Physics; IX., The Future of Applied Mathematics. Part III., The Objective Value of Science: X., Is Science Artificial? XI., Science and Reality.

book in general, the variety of subjects is somewhat too great to be adequately treated. M. Poincaré, however, writes in a most concise manner, and, unlike the average Frenchman, is no easy reading. His remarks are pointed, and his whole treatment is rather a series of careful analyses, than a systematic and connected treatise. As the table of contents shows, the outline of topics is rather ambitious for so small a volume.

In contrasting the values of intuition and logic, M. Poincaré asserts that the former does not give us certitude, while the latter does, and hence the emphasis upon the latter in scientific demonstration. It seems to me, however, that intuition is the basis of all reasoning, affording us the halting-places in the upward passage of logical advance. The verbal and other symbols have no meaning without the 'set' given them by the attitude which accompanies them, without the intuitional response acting as a step of the ladder in the progress of the thought concerned. And concerning the certitude of the intuitional or 'geometrical' method in mathematics, surely Newton's *Principia* are just as valid as the more 'logical' treatment of Leibnitz.

In the treatment of space, we find an original discussion of the continuum in its various dimensions. Space, as a pristine experience, is amorphous. Upon this as a basis, we develop the various continua. In brute experience, we may be unable to distinguish, in a physical continuum, two impressions, while we may be able to tell each of them from some third, higher or lower in the scale. For example, while we may be able to distinguish 10 *gr.* from 12 *gr.*, still 10 *gr.*, 11 *gr.*, 12 *gr.*, etc., may not be so distinguishable. This gives us some idea of a continuum in our original experience. As a *felt* experience, we may express this by the formula,

$$A = B, \quad B = C, \quad A < C,$$

thus symbolizing a continuum as experienced. We may, however, have a continuum of one or more dimensions, and here the notion of division, breach or break must be introduced.

We may represent the parts of a physical continuum by

$$E_1, E_2, \dots, E_n,$$

which is so *experienced* that (1) all the parts are felt as belonging to the continuum, and (2) each is indiscernible from the following. When, to divide a continuum, it is necessary to consider as a break a number of elements indiscernible from one another, we say the continuum is of one dimension. If, however, the break consists of a system of elements forming among themselves a number of continua, we say the original continuum is of many dimensions. When the break forms more than one continuum, the original continuum is of two dimensions. If the break is a continuum of two or more dimensions, we say the original continuum is of three dimensions; and so on. In plain English, a linear continuum in space is one which may be broken by a point, a plane continuum one which may be broken by a line, a volumetric continuum one which may

be broken by a plane; and so on. Concerning the psychology of space, this is explained in the usual manner, emphasis being placed on the motor adjustments.

The treatment of the physical sciences is rather cursory, as one might expect from the amount of space devoted to it. The empirical and tentative character of our various laws is shown, so M. Poincaré states, in the changing values and new interpretations necessary for the various principles, those, among others, of Carnot, Newton, Lavoisier, Mayer, etc.

The latter part of the book (Part III.) is taken up with a criticism of a certain M. le Roy, while at the end of the book, science is defined as 'a system of relations' (p. 266). Science does not lead us to know the true *nature* of things, but rather the true *relations* of things (p. 266).

I have attempted to touch upon only certain more or less interesting parts of the book in a suggestive manner. It requires close reading and rereading to get all there is out of it. And the large field which it tries to cover presupposes a varied and extensive knowledge at the start.

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Esquisse d'une théorie biologique du sommeil. E. CLAPARÈDE. *Archives de Psychologie.* Tome IV., 1905. Pp. 245-349.

The various physiological theories of sleep are first reviewed, some of which are classified by the author as 'hypotheses of mechanism,' others as 'autonomous theories.' Under the former head falls the widely accepted theory of *cerebral anæmia*, well known from the writings of Mosso, Howell and others; likewise the directly opposed theory of *cerebral hyperæmia*. In the same class, also, is placed Duval's ingenious hypothesis of the *retraction of the neurones*, according to which sleep and other disassociative mental states have for their cause a severance of continuity in the neural paths, resulting from a retraction of the dendritic processes. Against these and some other views which he cites, the author offers the following general criticisms:

1. The supposed facts upon which the theories are based are not sufficiently well grounded, and the testimony of various writers is in some cases quite contradictory, as witness the uncertainty whether the brain is in a condition of anæmia or hyperæmia during sleep. Recent histological studies (*e. g.*, those of Apáthy, to which no allusion is made) have likewise discredited the retraction hypothesis.¹

2. These phenomena, which are adduced as *causes*, might just as well be regarded as the *effects* of sleep.

3. Even supposing these phenomena to be in reality the immediate causes of sleep, we are not told *why*, for example, these changes in the circulation occur, or *why* the retraction of the neurones, etc.

¹ Temporary *functional* interruptions in the continuity of nerve paths must, however, be assumed, almost of necessity; and such functional interruptions would, of course, furnish as good a physiological basis for sleep as the temporary *organic* discontinuity of Duval's hypothesis.

The 'autonomous' theories, on the other hand, 'regard fatigue, *i. e.*, the wear and tear of the tissues produced by the activity of waking life, as the efficient cause of sleep; sleep is itself considered as a phase of organic regeneration; it is, then, in its turn, the condition of the state of waking which succeeds it.' Such theories are thus self-sufficient, or 'autonomous,' so far as they go. There are two classes of hypotheses here to be noted, one of which assumes the exhaustion of certain substances necessary to the normal life of the organism, these being restored during sleep; the other assumes a condition of *auto-intoxication* (*e. g.*, the 'autonarcose carbonique' of R. Dubois).

To the hypotheses of this class Claparède offers a truly formidable list of objections, in presenting which I have not followed strictly the author's own mode of arrangement. (1) It is not justifiable to confuse various artificial states of stupefaction with sleep proper. (2) May not the increase of CO_2 in the blood (shown by Dubois to occur in hibernating animals) be the *effect* rather than the *cause* of sleep? (3) There is no parallelism between the degree of exhaustion and the amount of sleep which ensues, as witness the case of insomnia. (4) The alternation of sleeping and waking ought to conform to a periodicity of much briefer phases. At the moment of going to sleep, our processes of destructive metabolism have, *ex hypothesi*, reached a point *just sufficient* to produce this effect. Why, then, does sleep last so long? The process of recuperation (or of elimination) should bring us to the waking level in a very short time. Thus the rhythm should be more like that of respiration, the beat of the heart, etc. (5) The toxic conception is anti-physiological. We experience none of the baneful effects of narcotization; on the contrary, there is a trophic, or reparative, action during sleep. (6) Interest, volition and suggestion play an important part in hastening or retarding sleep. (7) How explain the effects of darkness, monotonous stimuli, etc.? (8) We may go to sleep almost instantly, and display a complete mental lucidity almost immediately after waking. (9) The sleeper remains alert and responsive toward certain sounds, having a special *meaning* to him. How could a narcotization of the brain have such a discriminating effect upon the mental reactions? (10) The form of the curve representing the depth of sleep at different hours of the night does not conform to that which we should expect if we had to do simply with recovery from fatigue or the elimination of poisons. (11) Diverse biological considerations: Why are some animals, *e. g.*, the cat, able to sleep at any time of night or day? Why do birds sleep for so short a time, especially in view of such prolonged activity? Why do some other animals sleep so very lightly? Why do some sleep regularly in the daytime and others at night? How account for the duration of hibernal sleep? (12) Pathological facts: insomnia of maniacs, who are constantly in movement; case of Siamese twins, who slept in some measure independently of one another, etc.

As a substitute for these various physiological theories the author proposes his own 'biological' theory, *biological* because it regards the subject from the view-point of the total organism. Sleep, he tells us,

is not a mere cessation of activity—it is a ‘positive function.’ This general attitude, he acknowledges, is not original, having been clearly stated by a number of other physiologists and psychologists, *e. g.*, Janet and Myers.

Sleep is not the effect of exhaustion, but forestalls and wards off exhaustion. “It is not because we are poisoned or exhausted that we sleep, but we sleep in order not to be.” Thus sleep frequently occurs without there being any other symptoms of fatigue. This lack of proportion between the cause and the effect is what distinguishes a positive activity (reflex or instinctive) from the passive result of a physical or chemical agency. For it is with instinctive and reflex actions, we are told, that sleep must be classed. Specifically, it is an ‘instinct of defense.’ Thus it is subject to what the author terms ‘the law of the interest of the moment,’ *i. e.*, the supremacy, in case of conflict, of that instinct which is momentarily of most importance to the organism. This is the explanation, he believes, of various facts which are unintelligible according to current physiological theories. To keep awake, when occupied with important business, is merely an example of the momentary suppression of one instinctive tendency in favor of another.

The discussion of the ‘stimuli of sleep’ (for sleep, like any other instinctive act, is provoked by stimuli) brings forth some interesting problems. The relation of darkness to sleep would seem at first to be a simple and direct one; and indeed the withdrawal of visual stimuli generally predisposes the organism to sleep. But we have nocturnal animals, which sleep by day, and others, such as cats and dogs, which sleep regardless of the hour of day or night. These cases are all readily intelligible when regarded as adaptations to particular modes of life. The notion of the time of day, or rather of the interval which has elapsed since we last slept, is one of the main factors in determining our going to sleep; and, similarly, as we all know by experience, the duration of our sleep is frequently determined with great exactness. The author cites the case of an orang-outang which slept from six P.M. till six A.M., while in Java, but which, on being borne westward, on its way to Europe, ‘gained time’ like a chronometer; so that its period of repose was from two P.M. till two A.M. at the Cape of Good Hope!

Hibernal sleep, according to Claparède, is a real sleep, comparable with and historically derived from ordinary sleep. The instinctive character of sleep in general is particularly well exemplified in this phenomenon. Hibernation is not the physiological effect of a lowered temperature, for the latter fails to produce this effect unless the organism is favorably predisposed. This predisposition is largely a matter of the nutritive condition of the organism. Reduced temperature may, however, act as an immediate stimulus to hibernal sleep. The biological significance both of hibernation and æstivation is the fact that the animal is thereby enabled to escape starvation during a period of inadequate food-supply. In this respect it is comparable with the migration of birds. Historically, it is ‘the consequence of the habit, contracted by certain mammals [animals] of passing the winter in a hiding-place where they

have stored their provisions.' The vitiated atmosphere of the place of seclusion may be a contributory factor, but the increase of carbon dioxide in the blood (affirmed by Dubois) is not the primary cause of the phenomenon. Many readers will doubtless be surprised to learn that the poverty-stricken peasants of certain parts of Russia are wont to pass into a hibernial sleep which may last interruptedly for several months (Volkov).

As to the 'mechanism' of sleep, the author accepts the view that it is a phenomenon of inhibition, which he picturesquely terms a 'psychological suicide.' It is a 'reaction of disinterest for the present situation.' It is not, however, a complete suspension of our 'psychism.' The phenomena of *irritability* persist, but the *reactivity* is temporarily annulled. Against the vaso-motor theories of sleep, he remarks: "I do not see how, by a simple vaso-motor mechanism, one would be able to realize the delicate attentional selections which obey the law of the interest of the moment." It may be rejoined, however, that these same 'delicate attentional selections' are equally difficult to understand on the author's theory of inhibition, which is based upon Verworn's conception of the latter as 'the predominance of assimilation over disassimilation.' The mechanism of sleep, whatever it is, must be as complex as the phenomena to be explained.

Strictly speaking, there can be no 'center of sleep,' the author says, for, as in the case of other instinctive actions, many parts of the brain are concerned simultaneously.

The restorative effects of sleep are due, first, to the enforced *repose*, and second, to the increase of the *trophic* processes in general—this in spite of the fact that the activity of the viscera is lowered.

The author's assignment of a specific 'function' to *dreams*, especially a function so far removed from racial self-preservation as the conservation of our early memories and the exercise of our unbridled fancies, is calculated to startle any one who has followed the trend of recent evolutionary speculation.

Historically, Claparède regards sleep as an acquired function, a contingent rather than an essential phenomenon in the living world. Few comparative studies have been made, but so far no indications of sleep have been found in the Protozoa, and even in some birds it is almost lacking. Indeed, there is no *a priori* reason for assuming the universality of sleep. It is necessary, in a given case, either (1) if the organism expends itself more rapidly than it repairs itself; or (2) if the toxic waste products are eliminated less rapidly than they are formed. Neither of these conditions is a physiological necessity, however.

The author offers two hypotheses as to the phyletic origin of sleep, but he does not commit himself definitely to either view:

1. Sleep was primarily a phenomenon of exhaustion, but became, secondarily, an active inhibition, through the operation of natural selection.

2. Sleep owes its origin to some other need, but the instinct was brought to its present state of development in consequence of its reparative value (here again through natural selection). Its original function

was perhaps the escape of nocturnal enemies. A comparison is here made with the familiar instinct of feigning death.

A comparison is likewise made between sleep and hysteria, the latter condition being characterized as 'an abnormal exaggeration of the reactions of defensive mental inhibition.'

A 'biological' theory of sleep (using the former word, as Claparède has done, in its narrower sense) obviously does not stand in any necessary contradiction to a purely physiological theory. Nor does Claparède make this contention. The phenomenon which is interpreted by him as an instinctive act of defensive inhibition might well have, as its proximate cause, a condition of cerebral anæmia or of hyperæmia, or the disseveration of certain neurones, or any one of the numerous other causes which have been offered in explanation of sleep. Each of these hypotheses must be disposed of on its own merits, as indeed the author has endeavored to do. A complete explanation of sleep will, however, take into consideration its physiological and chemical concomitants as well as its 'biological' significance. In the meantime Claparède has done a service by his attempt to affiliate sleep with various other biological phenomena, even though these latter are themselves far from being well understood.

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A Motor Theory of Rhythm and Discrete Succession. R. H. STETSON.
Psychological Review, July-September, 1905. Pp. 250-270, 293-350.

The experience of rhythm in music, verse, dancing, waving a baton, or listening to a series of uniform sounds like the ticks of a clock, is explained by the subject carrying on continuous rhythmic movements. This is the extreme form of the motor theory which Stetson adopts. Other advocates of the theory have allowed some place to mental images, to tension without movement, or to organic rhythms of the circulation or nervous system. These are specifically excluded by Stetson. The paper is an elaboration of brief suggestions published in 'Rhythm and Rhyme' (Monograph Supplement of *Psychological Review*, IV., 453-466). The main purpose is to apply the theory to definite rhythms. The experimental data consist of records and measurements of voluntary rhythmic movements of the baton, fingers, and foot while listening to a sound-series or unaccompanied. The paper tacitly assumes that the movements voluntarily made will represent the conditions in the perception of rhythm when the movements are involuntary. My study of the latter makes me hesitate to accept such a conclusion. How far volition changes the involuntary group-movement remains an important question.

The analysis of the voluntary rhythmic movement-cycle is admirably done and aids materially in applying the motor theory. The movement-cycle corresponding to the rhythmic group consists primarily of a beat-stroke and a back-stroke. It is usually complicated by auxiliary movements of smaller muscles which provide the subordinate elements in the group. The action of the muscles is of the ballistic type described by Richer; one set of muscles contracts while its opposing set relaxes.

Having started the beat, the main positive set relaxes during the first half of the beat-stroke. This contraction-relaxation is the cue for the negative set to contract, as is shown by the fact that the back-stroke is not altered by the intervention of an obstacle after the contraction of the positive set. The beat-stroke changes abruptly into the back-stroke when the cue for the negative set to contract has been returned from the nerve center. The back-stroke, on the other hand, rounds off slowly into the next beat-stroke as the muscles tend to become poised. The velocity of the beat-stroke is two to three times that of the back-stroke, its duration is independent of the tempo of the rhythm and of the length of the stroke. The back-stroke alone is subject to regulation after it starts. The only rhythmic form larger than the unit-group for which the motor theory can serve is the phrase. This is not modeled after the smaller group, as has been supposed, but is a form of movement with a rise in the central part and decline at the end. In reciting verse or singing, the phrase becomes a single act of expiration. The pause after the phrase is non-rhythmical and of indefinite length. There is no priority in the genetic development of different rhythmic forms; but the dactyl resembles the trochee and the anapest, the iamb. The spondee is not recognized as a group-form. The movement-cycle in the rhythms of speech includes the diaphragm, jaw and tongue, but not the vocal cords. Pitch, therefore, has no function in the rhythm. The vocal cords are incapable of that reciprocal movement united with a sudden blow which is necessary to the rhythmic cycle.

Stetson takes issue with Meumann and McDougall as to the common classification of rhythms by their ideational content. He regards this as 'worthless.' "It is based on a hasty generalization of the relation of artistic form to artistic content, and when worked out is simply at variance with the facts. . . . The material does not war with the form and wrench it from its true proportions" (p. 252). While this contention has weight as to the undisturbed regularity of the rhythmic movement, it certainly does not affect McDougall's main point that the rhythm is weakened by the attention being attracted to factors of 'melody, harmony or rational significance.' In place of the old classifications a new one is offered on a strictly motor basis. 'Single rhythm' (verse, ticking of the clock, occupation rhythms) consists of one movement-process, contrasted with 'combined rhythm' (music and dancing) in which there are two series of movements carried on concomitantly. In music there is one series for keeping time, in which a movement is always repeated in the same way; this slow movement is accompanied by the elaborately figured rhythm of the melody which forms a distinct movement-cycle in another group of muscles. The measure differs from the unit-group in 'single rhythm' as the result of the mutual effects of the two series, the use of tempo, of tremolo-groups, and of single beats. The detailed suggestions for the interpretation of the complicated rhythms of music are a distinct advance.

The fundamental psychological problem in rhythm, why the group is experienced as a continuous unit, is held to be explained by the constantly changing tension between the positive and negative muscle sets. If the

pulls of the two sets become balanced so that the movement stops, there is a break in the rhythm. This requirement of 'actual movement' appears to me to allow too little latitude for individual differences. With some subjects a continuing tension followed by relaxation might serve to preserve the rhythm. Moreover, Stetson even excludes memory images of movement. "No succession of images which are not accompanied by actual movements can give rise to a rhythm" (p. 320). I can not see why memory should be excluded from the perception of rhythm any more than from other perceptions. It would be interesting to know how Stetson would explain the perception of rhythm when the subject observes no movement and none can be detected. He says further: "The process remains one movement just as the letter in writing, the word in speaking, the complex movements in striking a chord at the piano or turning a door-knob, are all one movement." "The muscles are all contracting or relaxing in one common wave of innervation" (p. 298). Since this holds also for the perception of a rhythm of sounds, I fail to see the force of Stetson's criticism of a statement of mine. The unitary character of the group, according to my suggestion, finds an analogy in the wave of reflex movement (not movement of one muscle, as he interprets) which results from the fusion of several successive stimuli. He states that 'such a fusion might explain the *omission* of the subordinate beats, but not their grouping.' My record of the thumb-reflex shows the crest of a large wave broken into smaller waves. This seems to best demonstrate 'one common wave of innervation.'

Use is made of the action theory of Münsterberg to explain the apparent rhythmic accent in a uniform series of stimuli. The accent occurs with a stronger movement, but the vividness of the accented element is due to the stronger efferent nerve current, not to the presence of more intense kinesthetic sensations. In speculating further as to the central process during rhythm, Stetson utilizes Holt's notion of a localization center, formulated in the study of visual anesthesia during eye movements. By supposing that impulses collected in this center discharge into a motor center at certain points in the cycle, he constructs a diagrammatic plan to harmonize the explanation of rhythmic temporal displacement, anesthesia during eye movement, maximal rate of discrete succession, and the omission of notes in a rapid series of sounds.

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Die Einfühlung und das Symbol. ROBERT M. WERNAER. *Zeitschrift für Philosophie und Philosophische Kritik*, Band 126, Heft I. Pp. 29-44.

Two important distinctions are discussed in this paper: first, and briefly, that between sign and symbol; second, that between symbol and 'Einfühlung.' The author quotes from Lipps this definition of sign: "A sign is that which tells me that something else, viz., the thing signified, exists. Smoke is the sign of fire, *i. e.*, it tells me of the existence of fire." The symbol, on the other hand, according to Mr. Wernaer, has four essential components: (1) a sensible picture, (2) an inner (*seelische*)

meaning, (3) an adequate embodiment of picture and meaning, (4) a lack of identity between the two, a consciousness of their duality. The third of these distinguishes the symbol from the sign. The thing signified is never incorporated in the sign. Fire is not the inner spirit of smoke and smoke is not the sensible embodiment of fire.

The fourth component of the symbol, the consciousness of the duality of sensible and spiritual elements, distinguishes symbol from *Einfühlung*. This distinction is the central problem in the discussion. Lipps, in his discussion of the symbol, had identified symbol and *Einfühlung*. "We call by the name of symbol," he had said, "that object in which we immediately experience something else, a tendency, an inner activity, in short, some manifestation of our own mental life. . . . We speak in particular of an esthetic symbol when no question is raised as to whether this inner activity or condition is really in the object." This also characterizes the *Einfühlung*, that state in which all consciousness of distinction between myself and the object is lost; when I 'feel myself into the object,' as it were; it is a state in which I am identified with the object without even raising the question as to whether there is such an identification. Mr. Wernaer's illustration may help to make the conception clearer. It runs as follows: I find in the woods a swift stream: the water leaps from stone to stone like a live thing, pursuing a definite purpose. I know not its source; it is constantly disappearing before my eyes and I know not whither it goes. I fall into a dream-like state and forget that I am standing on the bank of a stream. I seem to dream, as it were, the life of the brook that flows before me. My source is unknown. I flow hence according to the impulse of my nature; I disappear again almost before I have begun to be. 'Whence do I come?' I cry, 'and whither do I go?' and a feeling of mystery lays hold of me.

This is the esthetic *Einfühlung*, but it is not symbolism, according to our author. The *Einfühlung* may be succeeded by another state, a state which is still a part of the esthetic experience and one that is far better known to poet and artist than is the *Einfühlung* itself. In this latter state the object regains its objective character but has a new content, a content made up of the feelings which I have objectified in it. It has now a definite personality, derived from me, which lives on in it. In other words, complete esthetic absorption is not, in his opinion, the sole esthetic state. Complete loss of distinction between self and object is only one phase of the esthetic experience. The other phase is a necessary presupposition of esthetic symbolism, which, like all symbolism, requires not only unity, but a consciousness of duality.

In the opinion of the reviewer, Mr. Wernaer has made his point. The whole question is, of course, one of definition. But the term symbol is too useful in its earlier signification to warrant us in obliterating the distinction between it and *Einfühlung*, a word which stands for a mental state in which there is no consciousness of duality. A symbol which is not distinguished from the thing symbolized is not a symbol. Mr. Wernaer shows the reasons, historical and polemical, for the tendency

to use the term in the sense here criticized, but he shows also that they do not warrant the change.

Several other interesting points are discussed in the paper.

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Distinction entre connaissance et volonté. G. VAILATI. *Revue de philosophie*, June, 1905. Pp. 642-648.

Difference of opinion between specialists is found to a greater or less extent in most of the sciences, but it attains the extreme, perhaps, in philosophy. A thesis should, therefore, be especially welcome to philosophers, and hardly distasteful to scientific men, which would enable us to understand how two opposing views may often be equally correct. Such a thesis is advanced by M. Vailati. While it contains nothing very new, being roughly in accord with the humanistic point of view, we do not remember that any one has used that point of view to promote philosophic peace and toleration just as M. Vailati has done. The thesis is that many statements of opinion are not so much pronouncements of what is true or false as they are expressions of personal taste, ideal or interest. Thus the owner of a valuable vase or goblet will say to a guest who handles it, 'This object is fragile.' The fragility is here not an observed fact, but is a term used to express the desire of the owner for careful handling on the part of his guest. Yet a verb is used in the indicative mode, which gives to what is properly just an expression of the owner's interest the guise of a statement of objective fact. And so we often predicate of things certain properties as facts which only indicate a desired action, and are not statements to be affirmed or denied. M. Vailati does not go so far as to say this is the case with all statements, nor does he propose, even by implication, to settle all philosophic differences of opinion. He suggests only that a great many statements which have generally been considered as making part of our body of knowledge, make up rather a part of our body of will-attitudes, and, therefore, any opposition that has appeared between such statements need give rise to no intellectual quarrels. His illustration of causation in this connection is clear and good: one man says the cause of a person's death by drowning is the water in the lungs; another, his inability to swim; another, his carelessness in stepping off the pier. All are equally correct, but each emphasizes that part of the cause which his own interest suggests as the pivotal one. Or, again, the so-called 'disinterested' verdict of science is no truer than any other interested verdict, being only that verdict which best satisfies the interest of correlating all experiences into a coherent system.

Would M. Vailati be willing to carry the application of his thesis a step farther and admit that the controversy between humanists and their opponents is itself just a difference of will-attitude? And that, therefore, no quarrel need arise? It seems to us that he would, and that his suggestion might thus be most fruitfully applied to bring about peace between the humanists and those who defend the objectivity and inde-

pendence of fact. Let the humanists emphasize the influence of practical interests upon the growth of our knowledge, if they so prefer; and let their opponents emphasize the objectivity and independence of that object-matter to which the growth of knowledge leads us, if they so prefer: surely *no* interest, practical or theoretical, is satisfied by our regarding these preferences as mutually contradictory.

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WILMON H. SHELDON.

Vergleichende Messung der kompensatorischen Rollungen beider Augen.

ROSWELL PARKER ANGIER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 37, 1905. S. 235-249.

In a recent work Delage has come to the rather remarkable conclusion that when the body is rotated around a sagittal axis passing half-way between the two eyes, the compensatory rotation of the eyeballs is sometimes less and sometimes greater than the angular distance that the body is moved through; that the rotations of the two eyes are not always equal, and may even be in opposite directions. These observations, if true, would be so important in their bearing on binocular vision that Dr. Angier has tested Delage's results. At first he used Helmholtz's three-rod apparatus, and found that the accuracy of depth-perception was virtually the same when the head was inclined at an angle to one side or the other, as when it was held upright. Also, if a straight line was continuously fixed and the head gradually inclined to one side, the image of the line became neither double nor indistinct. If, moreover, the head was turned while the eyes were shut and they were then opened on the luminous line, it generally appeared double, but the two images, so far from being crossed, were absolutely parallel. These observations cast grave doubt on the reliability of Delage's results.

Careful measurements of the compensatory rotation of each eye were made by letting the subject look long enough with one eye at a luminous point to obtain a clear after-image. He then inclined his head to one side a certain number of degrees and projected his after-image (the luminous line being removed) on to the center of a circular scale; the angle of inclination of the after-image was thus easily measured. The extreme angles of inclination were 180 degrees on each side, and the compensatory rotations of the two eyes were found to be so close as to be practically identical. The amount of rotation is also the same when the head is inclined a certain distance to one side as when inclined the same distance to the other. Of course, also, the direction of rotation of the two eyes was always alike.

Some minor observations make it probable that the amount of rotation for the two eyes at a given inclination is somewhat different according as the head has reached that inclination by being rotated through X degrees or through $360 - X$ degrees. This is almost the only point on which observations of Delage are confirmed. The paper establishes beyond any reasonable doubt the inaccuracy of Delage's experimental results.

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JOURNALS AND NEW BOOKS

MIND, July, 1905, No. 55. *Pragmatism v. Absolutism* (I.) (pp. 297-334): R. F. ALFRED HOERNLÉ. - After pointing out the difference between pragmatism and the older forms of voluntarism, the author proceeds to a criticism of Mr. Bradley's general theory and particularly his treatment of the relation of appearance to reality. *The Naturalism of Hume* (II.) (pp. 335-347): NORMAN SMITH. - This paper aims to show that Hume's contributions to ethics were not entirely or even mainly of a negative sort, that not all objects of action were conceived by him either as hedonic or egoistic and that reason, while subservient to the passions, had still a very positive function in building up moral conceptions. *Empiricism and the Absolute* (pp. 348-370): F. C. S. SCHILLER. - An elaborate and genuinely amusing criticism of Professor Taylor's metaphysics. The author points out that the numerous pragmatic elements in Professor Taylor's doctrine are wholly out of keeping with his general theory of absolutism. *Plato's View of the Soul* (pp. 371-389): ERIC J. ROBERTS. - The soul is intermediate between the world of ideas and the world of generation. Its two prime functions are the apprehending of universals and the originating of motions. The author would have us believe that Plato shows signs in his later work of substituting for his earlier triadism a subjective monism in which the objective realms of universal and particular are reduced to mere aspects of subjective experience. *Symbolic Reasoning* (VII.) (pp. 390-397): HUGH MACCOLL. - A discussion and criticism of the concept of distributed terms as used in the traditional logic, to which is added a plea for the recognition, by symbolic logicians, of the plurality of non-existences. Discussion: *The Existential Import of Propositions* (pp. 398-401): B. RUSSELL and HUGH MACCOLL. - Mr. Russell answers Mr. MacColl by explaining that the word non-existence has two meanings: (1) the common-sense meaning which is undefinable; (2) the conventional meaning in which non-existence is the character possessed by a class having no members. Mr. MacColl reiterates his objections to the purely 'conventional view' of non-existence. Critical Notices: E. Caird, *The Evolution of Theology in the Greek Philosophers*: R. P. HARDIE. H. Poincaré, *Science and Hypothesis*: B. RUSSELL. Dr. G. Heymans, *Einführung in die Metaphysik auf Grundlage der Erfahrung*: DAVID MORRISON. New Books. Philosophical Periodicals. Notes and Correspondence.

ZEITSCHRIFT FÜR PSYCHOLOGIE UND PHYSIOLOGIE DER SINNESORGANE. August, 1905, Band 39, Heft 3. *Zur Frage der motorischen Asymbolie (Apraxie)* (pp. 161-205): KARL HEILBRONNER. - An analysis of various forms of motor asymbolia gives the following classification: (1) cortical apraxia, characterized by lack of central control; (2) transcortical apraxia, characterized by lack of control of complicated voluntary movements; (3) asymbolias of guidance, characterized by confusion and interchange of movements; (4) agnosia (sensory asymbolia), including mental blindness, mental deafness, etc. *Zur Frage der*

Beeinflussung des Gedächtnisses durch Tuschreize (pp. 206-215): GISELA ALEXANDER SCHÄFER.—The course of the secondary memory image in counting or multiplying was not affected by the *Tuschreize*, a pistol-shot, except in the case of children. More recent images formed from memorizing series of colors were altered, the alteration varying with the complexity of the image to be reproduced. Primary memory images are always unfavorably affected. *Literaturbericht*.

Crawford, Alexander W. *The Philosophy of F. H. Jacobi*. Cornell Studies in Philosophy, No. 6. New York: The Macmillan Co. 1905. Pp. 90.

Dühring, Eugen. *Logik und Wissenschaftstheorie*. Leipzig: Thomas. 1905. Pp. xvi + 632. 12 M.

Höfding, Harald. *Moderne Philosophen*. Leipzig: Reisland. 1905. Pp. 217. 6 M.

Höfding, Harald. *The Problems of Philosophy*. Translated by G. M. Fisher, with a preface by William James. New York: The Macmillan Co. 1905. Pp. xvi + 201. \$1.25.

Kronenberg, M. *Kant: sein Leben und seine Lehre*. München: Beck. 1905. Pp. xii + 409. 4.80 M.

Mach, Ernst. *Erkenntnis und Irrtum: Skizzen zur Psychologie der Forschung*. Leipzig: Barth. 1905. Pp. xiii + 461. 11 M.

Read, Carveth. *The Metaphysics of Nature*. London: Adam and Charles Black. 1905. Pp. viii + 354. \$2.75.

Santayana, George. *The Life of Reason or the Phases of Human Progress*. New York: Scribners. 1905. Vol. III. *Reason in Religion*. Pp. 279. \$1.25. Vol. IV. *Reason in Art*. Pp. 230. \$1.25.

NOTES AND NEWS

PROFESSOR A. RIEHL, of the University of Halle, has been called to the University of Berlin, to succeed Professor W. Dilthey. His successor at Halle will be Professor H. Ebbinghaus, of Breslau.

DR. MEUMAN, professor of philosophy in the University of Zürich, has been called to succeed Professor Busse, at the University of Königsberg.

PRINCE SERGE TROUBETZKOI, rector of the University of Moscow and professor of philosophy in that university, died at St. Petersburg on October 12.

DR. R. M. WENLEY, professor of philosophy in the University of Michigan, has leave of absence for the year, which he is spending in Scotland.

THE chair of philosophy in Miami University, which was from 1888 to 1905 in charge of Dr. R. B. C. Johnson, now at Princeton, has been filled by the appointment of Elmer E. Powell, Ph.D. (Bonn).

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

FEELING AND CONCEPTION

THE attempt to identify feeling with the generic element of consciousness must involve the comparison of feeling to conception.¹ Let us first compare the function of conception with the function of feeling, and after that the content of conception with feeling as content. "Conception is," in Angell's words, "that mental operation by means of which we bring together the common points of our various experiences and mentally consolidate them into ideas; ideas which we are then able to use as symbols, or representatives, of these manifold items."² The importance of this consolidating function can scarcely be overestimated. In the work of memory it delivers us from total recall, and in the work of the practical imagination it keeps us from the equal peril of total anticipation. It is the negative side of the conscious economy, the side of simplification and retrenchment—in the Hegelian terminology the antithetical, abstract, reflective moment of thought. The result of the summarizing of experience is the possibility of packing into present consciousness the symbols or representatives of a great deal of past experience. The past and the future live and are present only vicariously in conception, and conversely a concept has meaning or value only as it stands for something which is absent. A concept is essentially a substitute.

This representative function may also be called the principle of unity and continuity. In the daily practice of living there are endless illustrations of the abstract idea accomplishing our transitions. The concept 'dinner' makes the fruits and meats and vegetables on our tables into a significant unity. The conception of myself as patriotic gets me out on Memorial Day; the concept 'me a citizen' would take me to the polls, but 'me a woman' must keep me away. We can not get from one moment of our lives to another without

¹ See my previous paper on the 'Relation of Feeling to Discrimination,' this JOURNAL, Vol. II., No. 23, p. 617.

² 'Psychology,' Chap. X., p. 208.

these conceptual hints. In logical terms the office of the concept may be described as follows: The syllogism unites a major and minor term by a mean or middle term. This mediating concept is, properly, the real universal in the syllogism, the other two being particulars. In any single inference the real conclusion is the discovery of the middle term, and this, therefore, is the true predicate or major term, the other two being minors. Every syllogism which distinguishes between the extent of its subject and predicate seems to me to involve a double deduction, to be no longer the expression of a simple inference; for if the predicate is understood as greater than the subject, then

$$\begin{array}{r} M - P = P > M \\ S - M = M > S \\ \hline S - P = P > S \end{array}$$

that is, we have not only the conclusion that *S* and *P* have a common bond, but also that *P* is greater than *S*. Syllogisms which end with *E* and *I* propositions have the purer form because here subject and predicate are interchangeable. I, for one, can not see in the syllogism anything beyond the principle that things equal to the same thing are equal to each other, and certainly in this principle the major predicate or universal is the concept which stands for 'the same thing.'

In the third place, the function of the concept is to effect valuation. It is the standard unit of mental measurements, or common denominator of the mind's contents. We can not estimate the relative worth of two things without a mediating concept. I can not intelligibly estimate dogs by diamonds until I have a unit. Such a unit would be the concept of 'size,' and I can readily compare the size of the two. Another unit would be the concept 'transparency,' but no statement of value can be made until they are both mustered up before the same concept.

The following questions must now be asked about the function of feeling; do we commonly recognize it also as a symbol of past experience? does it give unity and continuity to our thought, and is it in any sense a measure of value? In the emotions of conscience and the emotions of taste do we not find our whole past training in morals and in art-appreciation symbolized? Taste and conscience are the residuum of many esthetic and ethical judgments. Then, too, if we see a person betray emotion on any subject do we not immediately take it as a sign of past interest, thought or experience in that subject? As for recognizing in feeling a unifying agency, nothing could be commoner than the assumption of passion as a universal explanation. Anger, jealousy, fear and love are popularly called reasons and treated as subjective ultimates. How many of Balzac's novels have for their plot the portrayal of a single

passion? It is feeling which absorbs the several situations into a unity. Finally, it appears hardly to admit of question that feeling is recognized as a measure and index of value. If we doubt how much a person really values a certain thing, what could be more convincing than the amount of pain which he would endure for it? The sacrifice of pleasure or the acceptance of pain is proof, even to the most cynical, of the estimation in which we hold our object. We may, then, answer our questions in the affirmative, the offices which we ascribed to conception are also the functions of feeling.

The next point is the consideration of the concept as a content of present consciousness. By this we mean the concept at its face value, as it looks or sounds or tastes. In other words, what is the imagery of it? The images of perception and conception have the same source—we have no special sense-organ which we reserve for conceptual imagery and the result of this is that the kind of image which at one time is perceptual may at another be conceptual, and conversely. Thus the quality yellow may be a perception for me, or it may be the image of a class of which reddish-yellow and greenish-yellow are the particular members. I do not at all understand James's words that 'round square,' 'black-white-thing' are absolutely definite conceptions; it is a mere accident, as far as conception goes, that they happen to stand for things which nature never lets us sensibly perceive.³ Just the opposite seems to me to be true; for nature appears willing to let us perceive a great many contradictory things which we afterwards correct and harmonize by conception. A color may look to me a reddish-yellow and a greenish-yellow at the same instant, but I must conceive that it is pure yellow.

The imagery of the concept tends, on the whole, towards simplicity and the blurring and blotting out of detail. If I am perceiving some physical object—a pencil—without being immediately concerned about any other pencil, my tendency is to get as much of it as possible and through more than one sense. I look it over and over and handle it. But if I fix upon this pencil as a symbol of all others my tendency is to withdraw from an examination of it and not to touch it. I feel a conscientious restraint, and the result is an impoverished image. Unlike the perceptual image, the concept does not claim our attention. Whether or not they attain it, certainly many persons in their thinking strive for the generic image. What they seem to be after is an imitative or graphic symbol of the intension of the concept. To illustrate, we may have several lines connecting the same two points. The lines have peculiarities, but they are all subsumed under the concept of a line between these

³ 'Psychology,' Vol. I., p. 463.

points. We might consider a straight line as the simplest index of direction, the generic image for all. At any rate, it would be the least particular of all in the sense of having less variation. In so far as we do attain to impartial or non-committal imagery we find the spectacular display varying inversely with the degree of generalization; the more abstruse the thought, the more sober the mental panorama. Now the commonest terms in our mental imagery are sensations from the motor apparatus. Not only have we always with us some consciousness of neck, head, chest or abdominal muscles, some pulse or respiration throbs, but vision, hearing, smell, taste and touch all unite in having a muscular accompaniment to their imagery. From this it follows that the more abstract our concept the more properly would its image be some modification of the familiar motor experience. As a matter of fact we find the concept of self—that supreme genus of introspection—analyzed by James into just this experience: “The ‘Self of selves,’ when carefully examined, is found to consist mainly of the collection of these peculiar motions in the head or between the head and throat.”⁴ Whatever we decide about generic imagery or the actual content of the conceptual image, this much is certain that as a concept becomes more and more universal, its image becomes more purely symbolical. The number of qualities for which it stands becomes less, or the connotation more attenuated. Its structure becomes a matter of indifference, and in effect, at least, homogeneous.

Our final inquiry is the comparison of the concept with the content of emotion. In emotion the greater the functional extent the less is the specific connotation or intent. Suppose I wish to distinguish two shades of blue, my anticipatory feeling has a very particular content; my cues are the eye-movements of glancing back and forth, together with several imagined shades of blue. Suppose I wish to give a piece of meat to a dog, the cue to this action or the content of my feelings is the visual image of meat and dog and the muscle imagery from arm and hand. In both instances the situation and the emotions are relatively special and superficial. Let us contrast with them the case of some of the grosser and more profound emotions, hate, love, ennui.

In the emotion of anger—which is nothing but sudden hate—the common intent which is present in all the varieties from righteous wrath to personal pique is destruction, opposition or resistance. Every muscle becomes rigid and the whole body hardened. The origin of the intense feeling is the difficulty we find in making to some stimulus an appropriate response. The man who, when angry, always responds promptly with a blow is more serene within

⁴ “Psychology,” Vol. I., ch. 10, p. 301.

than the one who defers his reaction in the hope of finding a more crushing response. If some one publishes a libel about me, what am I to do—explode at the person who tells me of it, tear up the paper, break the furniture? Shall I hunt up the offender and hit him? Shall I go to my lawyer and sue him? Shall I wait for a chance to injure him in business or with his friends? Every suggestion gives temporary relief, because it seems to offer specific imagery which means a definite direction of discharge; but as one thing after another turns out inadequate, I seem repulsed in all directions, and feel reduced to a helpless irate pulp. Finally I take up again the different suggestions and hammer out some plan of retaliation. Feeling is strongest in this instance at the moment when every ordinary attempt at reaction has failed, when we have no proper imagery and can only feel ourselves a mass of inner excitement. This, then, is a moment of highly generalized consciousness; we feel, we intend, we conceive only opposition in general, with no consciousness of what species of opposition. We feel opposed in every possible way at once, but not in any particular way, that is, our emotion is wide in extension (though it is intense in the sense of being violent), but it is poor in connotation or real intension.

Similarly in the emotion of love we find a highly generalized excitement; only, instead of a whole organism in a passion of resistance we find it in a passion of compliance. The lover, whether his feeling be for an individual or for a world, must insist on serving in one way if he can not in another. His feeling is sharpest at the moment when he is most impotent, when all special attempts to do something acceptable are reduced to the feeling of effort in general—a feeling rich in extension but poor in content.

If it is true that the grosser emotions tend to stir up the organism as a whole while precluding at the first any special response, it looks as if these emotions must approximate one another in their content, and this, I believe, is exactly what they do. In every strong emotion there is muscular tension, visceral disturbance, and agitation in the breathing and pulse-beat. Trembling accompanies anger, fear, love, embarrassment and all profound feeling. We frequently hear that it is harder to arouse passion in the first place than to transform one passion into another. Perhaps the most generic of all emotions is the feeling of ennui. This feeling, very far from being mere languor or fatigue, may be profound to the point of paroxysm. It is a passionate longing for an interest of some kind, for anything at all. Imagination here fails utterly to suggest any welcome object, and we are driven to the poignant want of an object in general. Consciousness could not well be more completely homogeneous and subjective, and here we come to the mortifying admission that the

emotion of ennui is identical with our supreme concept—the pure consciousness of self.

Feeling and conception are the same in function and in content, and this aspect of consciousness stands for unity and simplicity, as against the perceptual aspect with its variety and complexity. I am aware that there is no arguing about ultimates, and all I have hoped to do is to point out the intimacy of the way in which feeling influences thought.

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MENTAL ELEMENTS OF DREAMS

IN connection with the study of dreams in an introductory course in psychology, fifty-five students (all women) were asked to recall and record their dreams on six successive mornings. They were requested to jot down the dreams as soon as possible after awakening; and they were urged to be frank and explicit in recording details. The students were assured that only the instructor would see the papers written for him and that all papers would be destroyed as soon as he had read and tabulated the results. Two facts were emphasized: (1) that it was desirable to know the nature of the imagery of the dreams (and the distinction of dreaming *about* a type of imagery and dreaming of *experiencing* that imagery was pointed out); and (2) the students were urged to seek, so far as might be possible, to explain their dreams in the light of recent thought and experience (the extent of the operation of the laws of association).

The fifty-five students reported and described with more or less completeness 287 dreams, or an average of 5.2 per student for the period (of six successive nights). The largest number reported by any one person was 12, and one student was unable to report any dreams, although she was of the conviction that on at least two nights out of the six she had dreamed; but she was unable to recall the nature and details of her dreams. In this connection it may be noted that the dream memory of most individuals is singularly weak; but the habit of recall materially increases its strength.

The most pronounced type of imagery was the visual, being mentioned in 63 per cent. of the 287 dreams; 11 per cent. dreamed of seeing people; 3 per cent. of seeing their homes; 2 per cent. of landscapes; 2 per cent. of the school-rooms in which the students customarily worked; 2 per cent. of cities or towns; 7 per

cent. of other specified visual experiences, such as seeing books, pictures, letters, flowers, etc.; and in 34 per cent. of the dreams visual imagery is mentioned, without specifying the distinct visual factor. One visual dream may be cited as an example: "I dreamed I was in a large room filled with books; they were in cases about the wall. What struck me as curious was the fact that they were all by one author; I saw his name on the back of the books in large gilt letters."

Auditory imagery is noted in 26 per cent. of the dreams; 4 per cent. dream of hearing voices; 2 per cent. dream of hearing music; 5 per cent. specify other sounds such as crying, bells, fire gong and the like; and 15 per cent. of the dreams note auditory imagery without specifying the exciting cause. One student heard her own voice called; one recognized the voice of a friend with whom she was conversing over the telephone. One dreamed of a cornet solo 'Bells of the West.' She says "I heard the music and I saw the player. I heard this selection played yesterday and I liked it."

Tactile imagery is mentioned in 8 per cent. of the dreams, chiefly of being touched by some one, of handling objects, and of taking hold of sticky or clammy substances. A student states that she dreamed that some one was squeezing her wrist, when she awoke and found that she had been clasping her left wrist with her right hand.

Motor imagery appears in 5 per cent. of the dreams. Two students dream of falling, two of running and one of rapid and vigorous walking. Two students dream of flying through space. One says: "I dreamed I was flying through space to escape some Chinamen. This dream was probably due to a conversation I had last night with my cousin. He told me that as a boy he supposed that people could fly like birds; and that one day he was about to make the experiment from a second-story window when he was stopped by his mother."

Olfactory imagery is mentioned in less than 1 per cent. of the dreams (two cases) and gustatory imagery in a little more than 1 per cent. (three cases). Temperature is mentioned in one dream; excessive fatigue in two dreams; and pain in two dreams.

Seven dreams were of a purely intellectual character and without specific imagery. One student says: "I dreamed of my mother, but I do not think I saw her in my dream." Another student writes: "I dreamed of receiving a large sum of money, but I do not recall that I saw the money." Another student dreamed of fire alarm, but she does not think she heard the sound in her dream.

There were emotional reactions in more than 11 per cent. of the dreams (31 cases), but in only two of the dreams were these reactions pleasurable. One mentions the keen pleasure she had in dreaming of hearing the chimes of church bells and another student notes the pleasure she experienced in seeing a beautiful painting in her dream. On the other hand, 29 of the emotional reactions noted in the dreams are more or less painful. Three dreamed of accidents to themselves and four of accidents to friends or relatives. Two dreamed of being ill. One dreamed of fainting. One dreamed of having an ulcerated tooth. There were six death dreams—three of the death of friends; one dreamed that she froze to death; one dreamed of a child who died and came to life again; and one student dreamed that one of her schoolmates had murdered another schoolmate. Three dreamed of being frightened and one of seeing a friend frightened. One dreamed of being in a rage of anger. Two experienced keen anxiety in their dreams because of losses—one of a valuable letter and another of her dress skirt.

There were six cases of redreaming. One student reported the same dream four times (it concerned the recitation of a certain difficult lesson). Another student had the same dream for the six successive nights; concerning it she says: "The dream related to [family] matters which occupy many of my waking thoughts." The other four repeated dreams had each a single repetition.

A singularly large number of the dreams (159 out of 287, or more than 55 per cent.) were accounted for by the students. More than 12 per cent. had immediate connection with home and social life; nearly 4 per cent. related to some recent personal experience; about 6 per cent. grew out of conversations with roommate or friends the previous evening; 4 per cent. had been suggested by reading or pictures; more than 6 per cent. had grown out of school work; and 22 per cent. more were accounted for by the students, although they did not specify in their papers the nature of the associations.

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DISCUSSION

THE KNOWLEDGE EXPERIENCE AND ITS RELATIONSHIPS

PROFESSOR WOODBRIDGE'S recent article in this JOURNAL¹ raises clearly and effectively certain questions involved in the conception of philosophy and its problems, which, in my mind, asso-

¹ Vol. II., No. 21, p. 573.

ciate themselves with the ideas set forth in the first chapter of 'Studies in Logical Theory.' At all events, I am going to make some points in his article an excuse for reverting to the position there taken, *viz.*, that the characteristic problem of philosophy is the relationships to one another borne by certain typical functions or modes of experience, *e. g.*, the practical, cognitional, esthetic, etc. Objectively put, philosophy arises because the reals which are the distinctively appropriate subject-matters of these different types get into conflict with one another, a conflict so thorough as to leave us no choice except (a) to doubt all, (b) somewhat arbitrarily to select one as the standard and norm for valuing the others, or (c) to effect a harmonization of their respective claims through a more thorough consideration of their respective historic and working positions and relationships.²

Woodbridge's article presents a special case of the general problem, *viz.*, how to justify the peculiar claims of knowledge to provide a valid account of other modes of experience. "If reality as true is but one sort of reality or one sort of experience, how can it possibly be affirmed that the nature of reality is most fittingly defined, when we have that sort, when, that is, reality is experienced as true?" (p. 574). And again: "We attempt to give an account of experience which will commend itself to thought. How can we succeed if we raise the suspicion that any account for thought must necessarily be not only partial and inadequate, but radically different from what experience is?" (p. 576).

1. Certainly any empirical statement which ends up in the implication that the knowledge account is radically different 'from what experience is' has committed suicide. But when we say, with Woodbridge, (1) that 'the real is simply *that* which is experienced and *as* it is experienced' (p. 573), and (2) that 'there are many sorts of experience of which the cognitive sort is only one' (p. 576), we seem to be committed to the conviction that the knowledge-experience is of things which, in some sense, are different from what the things of other experiences *were*, and from what they would continue to be in the future were it not for an intervening knowledge-experience. As I interpret the history of thought, it is precisely the fact that the knowledge account *is* different from what the things of other experiences are, contemporaneously with those experiences, which has been

²One of the many merits of Bradley's 'Appearance and Reality' is the way in which it thrusts this conception virtually, if not intentionally, to the foreground. It leaves but three alternatives: to accept Bradley's result; to explain *away* satisfactorily the seeming discrepancies of the various functions; or to find another method and scheme of harmonization than his.

the main motivation of the transcendental non-empirical conception of knowledge.

Because the things of experience *are* so many different things, it has been thought that reality to be one, single and comprehensive, must be *exclusively* identifiable with the content of the perfected knowledge account; and this is then set over against the things of other experiences (of all experience *qua* experience), as the absolute against the phenomenal, the really real against the world of appearances. Hence the attacks made by the transcendentalists upon recent empiricisms (however denominated), because they deny exclusive or isolated jurisdiction to the knowledge function. Hence also the charges by the empiricists upon the 'transcendent' concept of knowledge, claiming that the isolation in which knowledge is placed leaves it an arbitrary, brute dictum (none the less arbitrary and even solipsistic because referred to a knower *termed* Absolute), or else a subjectivistic esthetic indulgence, since such isolation excludes verification in all the senses of verification hitherto employed by man. When, therefore, we have, as in Professor Woodbridge's account, a 'transcendence' notion of knowledge put forth with an empiristic motivation and basis, we have the problem in an especially interesting form: How can the knowledge-experience connect with other experiences in such a way as not to justify itself at *their* expense? How can, at one and the same time, knowledge be transcendental of other experiences, and the things of other experiences be real?

2. What, concretely, is the knowledge-experience? Three sets of facts are designated by the term knowledge: (1) It may denote the *de facto* presence in experience of a discriminate or outstanding quale or content. Some degree of distinction is necessary to any experienced thing, and such determinateness in experience one may agree to call knowledge. This sort of thing can hardly be referred to as transcendental—for what does it transcend? Not the things of other experiences, for it *is* the things of all experiences. It is a name for them in their determinate character. If transcendence refers to the relationships between such things, and things not *at all* determinately present in experience, then it has an intelligible meaning, but appears to involve a theory of the existence of reals apart from experience—or to be non-empirical. And transcendence as a relationship of that which is in experience to out-of-experience things would certainly make wholly meaningless *any* statement as to whether knowledge does or does not modify the out-of-experience. Such a statement can have intelligible meaning only when said of the things of knowledge in contrast and connection with other experienced things. Knowledge

in this sense (apart from the question of the appropriateness of the term) does not seem, then, to be anything more than a restatement of the postulate of immediate empiricism: that things are that which they are experienced to be, recognizing that some sort of distinctiveness is necessary to any thing. All things, truth and error, the obscure and the clear, the practical, the logical, the esthetic, are thus present, and all equally real—though *not* equally valuable and valid.

(2) Reference as a contemporaneous empirical trait is not an inevitable accompaniment of presence as just defined. The quale or content which discriminates a thing may not be referred explicitly to any other, nor any other to it. Connection may exist, however, practically: one thing may be found subsequently to affect, influence or control, favorably or unfavorably, the quality of some other present thing. Reference as an empirical fact is then established—that is, becomes a discriminate element in the constitution of something which is complex. Hence a second sense of knowledge. It is the experience in which the nature of such reference is investigated and defined. This involves such transformation of the character of antecedent things as makes possible the ascription to them and the maintenance by them of the relevant references.

Recognize that practical bearing or influence becomes explicit as reference in case of conflicting and therefore uncertain and contradictory bearings, and we get knowledge as Woodbridge has defined it when he says: "It is of such a sort that it enables us to tell what the others actually are when *we ask the question about their sort.*"

The practical conflict of experiences in bringing to light the problem of their reference, also brings to light the question of their nature as fitted to sustain such and such a reference; it makes their old characters suspicious, doubtful, precarious—in a word, problematic. This inherent dissentience is always, as to its *terminus ad quem*, a movement of inquiry, of institution or definition. This constitutes an answering or 'telling' experience in which an unquestioned thing replaces the dubious thing. Hence, while it would not do to say that the statement quoted above is an innocuous truism—there are too many subjectivistic theories of knowledge abroad to render its realistic implication other than important—it may do to say that its excellence lies in the fact that it identifies knowledge as a doubt-inquiry-answer experience.

When Woodbridge adds (to what was last quoted): "The question may not be asked and may not be answered. In that case no one sort of experience is identified or distinguished. And what sort of an experience would that be if not precisely what we should mean by an unconscious experience?" (p. 576), there appears to

be a relapse to the first sense of knowledge set forth. It is one thing to say that distinctive character is necessary to any experience, in order not to fall into the contradiction of an unconscious experience; it is another thing to say that *that kind* of identification and distinction, namely, of reference, which follows from express questioning and constitutes express answering, is necessary to a conscious experience. Only of the first sense of knowledge can the contradiction be relevant; only of the second sense is the reference to question and answer relevant.

Bearing these things in mind, I do not appreciate the difficulty in the statement that reality is most fittingly defined as true 'because defined in a way which most usefully meets the needs that raise the demand for definition' (p. 574, the 'needs,' however, do not 'raise' the demand, they *are* the demand). For the 'needs' and their 'usefully meeting' are neither of them extrinsic to the situation. The needs *are* the unstable, dissentient characters constituting an intolerable condition; while 'usefully' is the meeting of this demand, that is, their transformation into a stable, dependable state of affairs. Needs are not met more or less usefully; they are met more or less successfully, and the successful fulfillment defines the useful thing of the situation. There is no other measure of use.

I am convinced that the charges of subjectivism and of an arbitrarily utilitarian practicalism brought against current empiricism are due to the fact that the critic, because he himself retains a belief in the independent existence of a subject, ego, consciousness or whatever, external to the subject-matters, ascribes similar beliefs to the one criticized; and hence suppose that the latter, when he talks about genesis in needs, and outcome in success or fulfillment, is talking about something resident in a subject or consciousness which arbitrarily pounces in, picks out its plum and withdraws triumphant. But to the thoroughgoing empiricist, the self, the ego, consciousness, needs and utility, are all alike interpreted in terms of functions, contexts or contents in and of the things experienced.

3. The empiricist (of the immediate type) will prefer to use the term knowledge-experience, or cognitional experience, concerning the sort just described. For here things are *contemporaneously* experienced as known things. It is now and here that they have 'knownness' as one of their discriminated properties—just as they may have that of hardness or unpleasantness or monetary value. But 'knowledge' is also used to denote the function or result of the doubt-inquiry-answer experience in its outcome of critically assured presence, with respect to further experiences. By the nature of the case, dissentieney of conflicting things reaches an end when the

nature of reference is defined, and the character of things altered so that they may sustain such reference. Hence, when Woodbridge says (p. 575) "in cognitive experience all other sorts may exist without alteration," he says something which seems obviously false if said of knowledge in the second sense discussed (since transformation is the salient trait of *its* things), but ideally true of knowledge in this third sense. That is, the precise and defining aim of knowledge in the second sense is to *secure* things which are permanent or stable objects of reference; which may be persistently employed without thereby introducing further conflicts. Unalterability means precisely capacity to enter into further things as secured points of regard, established contents and *quales*, guaranteed methods.³

We are thus enabled to give a precise statement of the relationship of the knowledge-experience to alteration and to validity. In its second sense, knowledge arises because of the inherent discrepancy and consequent alteration of things. But it gives that alteration a particular turn which it would not take without knowledge—it directs alteration toward a result of security and stability. Hence it is because knowledge is an experience, in organic connections of genesis and destiny with other experiences, that the validity of knowledge or truth has an assignable meaning. Because it is an affair of meeting the concrete demands of things, the demand of dissentient things for consensus, harmony, through defining reference and through redefining things which sustain the reference in question, validity or invalidity is a trait or property of facts which may be empirically investigated and instituted. But validity is not definable or measurable in terms of the knowledge-content if *isolated*, but only of the *function* of the knowledge-experience in subsequent experiences. So knowledge tells us the 'nature of the real when it is most fittingly and appropriately defined,' because it is only when a real is ambiguous and discrepant that it needs definition. Its peculiar fitness is functional, relative and empirical, not absolutistic and transcendental. Yet we may admit a certain empirical transcendence. The outcome of the doubt-inquiry-answer experience literally goes beyond the state of suspense and dissentience out of which it originates. So far as the knowledge experience fulfills its function, it permanently transcends its own originating conditions. It puts certain things out of doubt, rendering them reliable, economical and fruitful constituents in other more complex things. *This* transcendence is the very essence of the pragmatic empiricist's account of truth.

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³ Knowledge might thus be roughly defined as the function of economically (or efficiently) securing increasing complexity in experienced things.

COGNITIVE EXPERIENCE AND ITS OBJECT

IN a recent issue of this JOURNAL¹ Professor Dewey contributes an interesting discussion of the postulate which forms the basis of immediate empiricism. According to his presentation this postulate amounts to the statement that things are what they are experienced to be. One experience must be held to be as real, as ultimate, as any other, and so the usual distinction between appearance and reality is necessarily wrong in principle. That is to say, the standard according to which we condemn certain experiences as erroneous, while others are judged to be 'true,' is not some fact external to the experience itself to which the experience in question either does or does not manage to conform, but resides within the experience itself. This seems to mean that if the experience by inner motivation 'points' to some further experience in which the prior experience fulfills itself, then this later experience is true to the extent to which the transition to the later experience takes place without any fundamental change in the quality or characteristic which continuously fulfills the corresponding quality present in the initial stage. Truth, then, is simply a relation which obtains among experiences that are equally real, and does not imply that certain experiences are simply appearances, in contrast to others which are not.

That this postulate is actually involved in immediate empiricism appears to be beyond rational dispute. All experiences are equally real. At this point, however, Professor Woodbridge raises the doubt whether immediate empiricism has been sufficiently mindful of the unique character of those experiences which are commonly called cognitive.² He expresses the fear that in their zeal to avoid the postulate of idealism the pragmatists have gone to the opposite extreme, and tend to dispose of all facts as 'experiences,' without much regard to the difference between the cognitive and the non-cognitive.

The point involved becomes apparent when, having accepted the empiricist's definition of reality, we take up the 'fruitful and important question, what is the nature of the real, when is it most fittingly and appropriately defined?' (p. 573). For in the face of this question another inevitably suggests itself: 'If reality as true is but one sort of reality, or one sort of experience, how can it possibly be affirmed that the nature of reality is most fittingly defined when . . . reality is experienced as true?' (p. 514).

All experiences, as has been said, are equally real, and, moreover,

¹ Vol. II., No. 15, pp. 393-399.

² This JOURNAL, Vol. II., No. 21, pp. 573-576.

they alone are real, yet this discovery does not absolve us from the obligation to answer the question, 'In what sort of experience do I find out what any sort of experience is, and is *actually* or otherwise?' (p. 575). And the answer to this question, it is held, necessitates the conclusion that 'the whole knowing experience is a transcendent kind of experience, related to all other kinds in a way in which they are not related to it' (p. 574). That is to say, 'In the cognitive experience all other sorts of experience may exist without alteration,' or, 'In the cognitive sort of experience all other sorts appear to be transcended' (p. 575).

At first sight it may appear that whatever difficulty may be felt arises from the fact that too sharp a separation is made by the critic between the cognitive experience and 'other experiences.' Professor Dewey says, 'I should define a cognitive experience as one which has certain bearings or implications which induce and fulfill themselves in a subsequent experience in which the relevant thing is experienced *as* cognized, *as* a known object, and is thereby transformed or reorganized' (p. 396). And this definition seems to take in all kinds of experiences, so that no injustice can be charged with regard to a special class of experiences. Thus, in the illustration given by Professor Dewey, the first experience is a 'fearsome noise,' which by its own peculiar constitution induces an investigation or inquiry, and so leads on to the experience labeled, 'noise as a wind-curtain fact.' With regard to the latter two things may be noted: (a) Its character differs from that of the preceding experience only in the circumstance that it is *more predominantly* of the kind described by James as 'knowledge-about' or 'pointing,' rather than of the kind known as direct 'acquaintance-with'; and (b) It is 'a change of experienced reality effected through the medium of cognition' (p. 395). Considered as 'true' it is superior to the prior experience, because in it we find the fulfillment, the readjustment, the satisfaction of the preceding experience, which 'clamored for reform.' Considered as real, both experiences are simply instances of present functioning, and so stand on the same level.

This seems to dispose of the suggestion that the difference between the cognitive and the non-cognitive has been overlooked and that the transcendent nature of cognition has been treated with neglect. If all experiences are the same in kind, there need be no occasion to emphasize a difference of this sort, nor is it obvious that the transcendent character of cognition does not receive due consideration. While there is doubtless 'a change of experienced reality effected through the medium of cognition,' this does not

preclude the possibility of satisfying the demand of the critic that 'in cognitive experience all other sorts of experience may exist without alteration.' (For 'other sorts' we must substitute 'other instances.') The other instances exist within it in the sense that they are continuous with it and are the objects to which the experience in question refers or 'points.' A difficulty can arise here, it would seem, only if we treat the former experiences as entities which are transferred bodily in order to be included as integral parts of the present experience.

Yet the point urged by Professor Woodbridge can not be set aside so easily. The explanation of the pragmatist gains whatever plausibility it may possess from the fact that the implications involved in the concept of an experience developing solely by inner motivation are not carried out to their logical conclusion. In a developing experience the later stage, as we have seen, is to be described as predominantly of the 'pointing' type, and this characteristic indicates that it is not a final stage. If the experience beginning with the 'fearsome noise' were permitted to run its full course, the experience of 'noise as a wind-curtain fact' would turn out to be simply a stage in a process, the goal of which would be another experience of the type of 'acquaintance-with,' differing, however, from the initial stage in the fact that it would be of this type, not merely predominantly, but completely or ideally. The complete 'truth' of any experience, it seems, must be sought in this final stage.

This final stage or term, however, can not, apparently, be considered as cognitive in the sense of answering a question regarding the nature of any other experience, nor can it be termed cognitive as this term is defined by Professor Dewey. I can not say, 'This is what that means,' for such affirmation implies pointing, and pointing is a characteristic that pertains solely to the stages which precede the final goal. The final stage, therefore, is neither true nor untrue, except for the onlooking psychologist. Though it be conceded that the progressive fulfillment of an experience brings out with increasing clearness the truth or meaning of the starting-point, the last stage is a bourne whence no traveler returns, even in retrospect. And the nature of this final stage is necessarily a question of supreme interest and importance.

I wish to repeat that the final stage is not one in which any questions are asked or answered. And, as Professor Woodbridge contends, if this be true, it follows that 'no one sort of experience is identified or distinguished. And what sort of an experience would that be if not precisely what we should mean by an unconscious experience?' (p. 576).

In a measure this sudden transition from a world which is synonymous with experience to a world which is most startlingly realistic is anticipated or at least suggested by statements such as the following, quoted from Professor Dewey: "The reader is begged to bear in mind that from this standpoint, when 'an experience' or 'some sort of experience' is referred to, 'some thing' or 'some sort of thing' is always meant" (p. 394). If these final terms can be properly characterized as unconscious experience, then conscious experience is a phrase which must be confined to relations between such final terms, and it seems to follow at once that 'consciousness may be defined, therefore, as a kind of continuum of objects.'³

It may, perhaps, be objected that Professor Woodbridge passes too hastily from an experience in which 'no one sort of experience is identified or distinguished' to the conclusion that such an experience or reality can be properly termed an unconscious experience. It takes too much for granted. The opponent may point out that identifying and distinguishing are lacking only in the sense which presupposes comparison with other experiences.

Nevertheless, this inference that the final experience may properly be termed unconscious seems capable of sufficient justification. In other words, it appears that, as the doctrine is stated, the element of 'knowledge-about' or 'pointing' is a constitutive and essential part of any experience of which we can form any respectable conception. While in the presentation of this doctrine it is usually made to appear that the first and the last stages of the continuous development through which experience becomes differentiated both belong to the same general type of 'acquaintance-with,' there is a difference which seems essential. This difference has been indicated already by the statement that the first stage is only predominantly of this type, while the last is completely or ideally so. If the first stage were ever complete in this sense the inner motivation by which it leads on to further experience could not be present, for the complete stage is a cave where all tracks lead inward. It would be a sort of island in an ocean of 'pointing' experiences. In the actual experience the feature which we discriminate is the one which forms the point of departure, which prompts investigation and further observation. Such a feature is necessary in order that this particular bit of experience may form organic connections with other experiences. And if we attempt the task of trimming away, mentally, from this experience all such features as would lead beyond themselves, we seem in the end to have nothing left but a mass of undifferentiated 'material' for which the epithet 'unconscious' seems

³ This JOURNAL, Vol. II., No. 5, p. 121.

entirely appropriate. And since the first stage can be made self-sufficient only by 'trimming,' it would appear that in the last stage also such sufficiency can be attained only at the cost of all inner differentiation. That is to say, pragmatism tacitly postulates an object of reference which lies beyond the experience of the individual.

To this conclusion it may perhaps be objected that the final stage or term is simply an abstraction or limiting term and not to be regarded as an experience anywhere realized or realizable. On the basis of this interpretation, however, it is difficult to see how solipsism is to be avoided. If we are to have a common world there must be numerically identical points which are common to the different systems of experience, and such identical points can be provided only by these final terms.

It appears, then, that the realistic conclusion follows from the premises laid down by the doctrine of pure experience. The distinction between the cognitive and the non-cognitive can not be evaded. And from the utter disparity between the two it seems necessary to conclude that 'consciousness and knowledge do actually disclose to us that which is in no way dependent on consciousness and knowledge for its existence or character. Knowledge is thus palpably realistic' (p. 123).

Is a realistic view of knowledge, then, our final hope? The acceptableness of this conclusion must depend in part upon the account which is given of the nature of those objects which knowledge is said to reveal. It seems that consciousness is, in a sense, an accidental feature of reality, since objects are not particularly affected by the circumstance of being known. It is claimed that even in a world like this no limits can be set to knowledge (p. 122), but it is not clear that any increase in knowledge would even approximate to the inner unity by virtue of which things are what they are. Knowledge reveals to us a set of qualities and relations, but the thing-hood of objects inevitably escapes us. Or shall we say that this demand is a return to scholastic essences and that whatever characteristics or attributes an object may possess are of the sort that are revealed to us in all knowing? This also involves implications which it is not easy to accept. What shall we say to such experiences as sweetness, contrast effects and harmoniousness? They undoubtedly have a basis in fact, but what sort of a fact is it? To say that it is the same sort of fact as that which we know when we experience them is to me rather unintelligible. And if it is conceded to be a different sort of fact, we seem forced to fall back on the distinction between primary and secondary qualities, which is simply the entering wedge of idealism.

Considerations of the sort here presented make it impossible for me to convince myself that the time has come to abandon the conception of selfhood as the ultimate category in metaphysics for that of pure experience or of objects existing independently of consciousness. Professor Woodbridge rightly warns the pragmatists against the tendency to do violence to the character of transcendence pertaining to the cognitive experience. That this character is put in jeopardy by their procedure I am forced to believe. But, in order to be just to this character, is it necessary, or even defensible, to postulate objects which are not dependent upon consciousness for their existence and their nature? Idealism, whatever its form, has difficulties in plenty; yet, to my mind, it indicates the direction in which the solution of our problems is to be sought, if it is to be found at all.

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REPLY TO DR. HUGHES

IN replying to the query of Dr. Hughes concerning my suggestions about a definition of consciousness, I hardly know how to make a more frank and open statement than the one which he seems to have found obscure. I hoped that the word 'empirical' used in the title would prevent misunderstanding. The question at issue is, of course, the question whether the distinction between public and private objects is a real distinction. In making it, it seems to me that I am in the region of the obvious and the commonplace. "Experience," I said, "contains objects not accidentally, but essentially, private, and it contains objects essentially public (I simply report the empirical situation, which may be as illusory as you like), and whether this division is important or not, it is empirically actual."¹ It seems to me that this distinction is empirically actual; I can not see how I could ever possibly have known my critic's views if he had not chosen to inform me of them. Let any teacher go into a classroom and sit silent before his class for an hour, while the members absorb his opinions by the same direct inspection they give to his physical person. As an empirical distinction, the division into public and private objects seems to me so commonplace that it is superfluous to dwell upon it. Whether consequences for metaphysics can be gotten out of it is another matter.

The readiest way to defend idealism is to point out that my conclusion concerning that doctrine rests upon a large *If*. If the chair

¹ P. 566.

is not of the essentially private portion of experience, idealism collapses. It is open to the idealist to say that the chair, all there is of it, is consciousness and hence a private object. It is so because it must be, on the basis of the physiological theory of perception. I admit that this perfectly legitimate reply is not easy to refute. But I am convinced that *our* metaphysics should rest upon our own actual experience to-day, and it seems to me extremely desirable to give fresh and altogether empirical descriptions of that experience.

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REVIEWS AND ABSTRACTS OF LITERATURE

Le rôle du jugement dans les phénomènes affectifs. V. GIGNOUX. *Revue Philosophique*, September, 1905, pp. 233-259.

"My purpose is," says M. Gignoux, "to examine and classify certain facts from which there seems to me to result the means of an easy reconciliation between the two theories of emotion, the intellectualistic and the physiological" (p. 233). With this intention, one of harmony, rather than one of destructive criticism, M. Gignoux ably presents the function of judgment in the various emotional attitudes, going through the whole range, from the more or less organic through the esthetic and intellectual emotions.

Concerning the organic feelings of pleasure-pain we have two differing explanations. The one, purely physiological, posits as a basis of the emotion a certain excitation of end-organs and body. The other, purely intellectualistic, presupposes a judgment as the prime mover of certain emotional states. To support the latter view, we may call into service those cases in which a fixed idea affects the body pleurably or otherwise, as in hypochondria. "This action of an idea on the visceral functions," says M. Gignoux, "is not at first sight clearly intelligible. . . . At present, we simply assert that, if many emotional states depend neither directly nor indirectly upon an intellectual state, many more arise from certain judgments, through the medium of organic conditions, which are often strongly influenced by these same judgments" (p. 237).

Higher than the purely organic feelings are the emotions of sadness or joy, etc., connected with the consciousness of our will-to-live, with judgments on the satisfaction or dissatisfaction of this tendency. All these emotions connected with the will-to-live are bound with organic concomitants. In fact, the work of James, Lange and Ribot has incontestably established the thesis, that in such cases of 'crude' response the emotion is the effect and not the cause of the body thrill. "But the immediate cause is not the original cause, and this immediate and organic antecedent of the emotion is itself very often the result of judgment alone. . . . The judgments which are the source of, and which direct the tendencies resulting in the emotion, are the following: (1) the perception of our conscious

and organic personality (which has as a necessary concomitant the perception of a not-self); (2) the appreciation of the chances of life and death which exist for our personality; (3) the appreciation of the furtherance or hindrance of our power of acting under the different forms and in the different directions of our personality; (4) the appreciation of the liberty which our personality enjoys or will enjoy, or of the obstacles which it meets or may meet" (p. 241). By the intermediary of the body tendencies these judgments operate. These tendencies of the will-to-live are in the direction of self-preservation, and of future self-preservation. This will-to-live is of our original nature, brute or otherwise. Upon this will-to-live the judgment acts, as it were, and develops certain dispositions, certain tendencies towards action and response. The congruence of certain situations with such dispositions thus developed and guided by the judgment, results in the emotional thrill of joy, or of sadness if conditions be otherwise.

In our relations with men, in our effort to make them happy, in our endeavor to conserve certain relations with humanity, still higher emotions are excited. Here, too, we have the intellectualistic *versus* the physiological interpretation. According to the former, "in our admiration of a virtuous act, for example, the causal series is as follows: appreciation of the blessings resulting from the act and our affirmation of the exceptional merit in its author, moral joy, physical agitation under influence of this moral joy, physical pleasure resulting from this neuro-muscular agitation and from accompanying vascular phenomena. In this process we must distinguish the joy which is of purely intellectual origin and the pleasure which is of purely organic origin. Between the joy and the pleasure there is produced a physical reaction, of which the joy is the cause and not the effect. According to the physiological theory, on the contrary, the process is as follows: judgment of the action and of the moral worth of its author, organic agitation, last of all, joy—both physical and moral—physical because it is a consciousness of organic reactions, moral because of its close connection in consciousness with the representations of the act admired and with the appreciation of its beauty" (p. 243). M. Gignoux tries to harmonize these two theories by giving to judgment the right of interpretation, of guidance in matters of emotional response, the instinctive body attitudes often going astray or frequently emphasizing unduly the moral worth of certain situations. "Once given our tendencies and our will-to-live, it is reason which governs our relations with our fellow men and, in general, the relations of all men with one another" (p. 246). In such cases instinct is guided by reason.

A still higher stage is reached when we come to the esthetic emotions. In esthetic appreciation we have not only the purely sensationalistic excitations and the organic thrills, but in addition the pleasure due to the judgments which interpret, among other things, the composition, color arrangement, truth of the whole picture, skill of invention, nature of the difficulties overcome and the like. As to the precedence in the emotion of the judgment or of the organic attitude, it seems, according to

M. Gignoux, that a certain innate capacity for esthetic appreciation must exist, before judgment can find any basis of appeal. The native tendencies must be present. "Esthetic emotion, like all other emotions, depends upon tendencies; in order to be truly esthetic the tendencies which are roused must be derived from certain judgments on the meaning of the objects present, and on the harmony of such objects with the ideas which they express" (p. 251).

Finally, when we reach the emotions of the intellect, we have as a basis of the emotions the success or failure of the efforts put forth in the search for truth. "In this case, too, the body phenomena are subordinated to certain judgments" (p. 255). Changes in respiration and other inner functions accompany our attainment or lack of attainment in the effort put forth. This furthering or hindering effect on our organic functions gives rise to the emotion, such effect, however, depending upon the congruence or lack of congruence of our ideational moments with the standards by which we judge.

In short, in all emotions judgment acts as a guide, a light, but has effect only through the body, which is controlled in whole or part by the judgment. If I may venture to interpret M. Gignoux's able presentation, judgment is not the first cause nor the last effect in emotion. Rather, we must, in all cases, start with native impulses more or less wild, which give us our basic emotions. By the residual effect of a process of valuing and interpreting, certain standards, certain acquired dispositions, are developed by the judgment, which in this manner acts on the native tendencies due to the will-to-live, and thus refines and guides the various emotional impulses. Judgment thus comes midway between the primal tendencies and the finished reaction, the resulting emotional response. But it must have as a basis upon which to work these native and instinctive impulses.

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History and Materialism. ALFRED H. LLOYD. *The American Historical Review*, Vol. X., No. 4, July, 1905. Pp. 727-750.

Professor Lloyd desires that 'history may gain anew the humanity and dramatic interest that to many it has appeared in serious danger of losing.' He deals, however, not so much with the present dearth of these interests, or with the nature of this desire, as with the medium by which he hopes to see it realized. It is that crass 'materialist,' the up-to-date historian, who, as an unwitting *moment* of an Hegelian metamorphosis, is soon to be exalted to an idealism of the true dynamic type. If it is a function of the philosopher thus to inform the specialist of the wider meaning of his task, then peculiarly welcome in this essay is the literary grace that should woo unwilling ears. The author's long study of the logic of history incites us to surmount all difficulties in the mastery of his present meaning.

Materialism is here defined as 'the tendency to treat what is only a part as if in itself it were an independent, self-supporting whole' When

thoroughgoing, as in the 'up-to-date historian,' it views all particular things and events as set over against the 'all-inclusive, self-perpetuating process' of the whole, which then is named universal environment, nature, fate, etc. Thus the parts of this total process are given a sort of isolation and independence, while the whole is treated as only another part, which imposes itself as a fatal process on all particular things, and especially on human life, robbing that of all interest and all initiative.

This materialism, then, lurks under the historian's patient study of minute, prosaic details. We have but to express it clearly to reveal its absurdity. For the whole can not be outside of, or fate to, anything. The conditions of life 'show only what life is, not what it has to be in spite of itself.' But to perceive this is to adopt the true, the dynamic idealism; it is to see that history is essentially history of the *whole*, which again is history of the *person*.¹ Such history alone is assured of dramatic movement and perspective; it is vital, not fatal.

The definition given of materialism assumes that wholes can be and are self-supporting, independent, in such a manner as is inconsistent with their being parts. No wonder that the author finds materialism everywhere, and especially in those 'boastful idealists' who most condemn it! For few would admit the existence of at any rate more than one such whole. And, especially, the wholes of which history treats, since they are movements that begin and cease, require a wider somewhat wherein beginning and end are situate. Of this containing somewhat the movement must in an important sense be a part, in whatever sense it be a whole.

As the realization of his concept of a dynamic whole that is part of nothing, the author finds only the 'living, urgent unity of experience'; which is the *person*. But can the unity of experience be living, or developing? Any movement of experience begins and ends *in* experience, and lies, therefore, as a whole within it. If there is a unity or a whole of experience that is part of nothing, it can not, therefore, be living or urgent. And how can it be a person? Persons have experience, and are in experience, their own and others', and a person sometimes is *an* experience; but surely he is never the unity of experience in the sense of a totality that is part of nothing.

Many will welcome this vigorous championship of constructive history, who yet may well insist that the work of the historian is not all of one type, and that minute prosaic details merit all the study that they now receive.

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Die Schätzung von Bewegungsgrößen bei Vorderarmbewegungen. Dr. ROSWELL P. ANGIER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 39, 1905, S. 429.

The paper deals with the estimation of movements made by the elbow-joint of the right arm. Since only one joint was used and the others

¹ Apparently because (p. 743) the whole of which history must treat is the development of the 'unity of experience.' Now the person is the 'living, urgent unity of experience.' Hence the person is the whole in question.

carefully excluded from participation, the movements were necessarily circular. Straight movements, as with a pencil on a line, obviously call into play several joints, and thus make the physiological conditions too complicated for any reliable interpretation. Standard and compared movements, moreover, started from the same point. This is a variation from the arrangement of most other experimenters, inasmuch as usually the second movement, whether standard or compared, has commenced from the same position as that at which the first ended. Moreover, standard and compared movements were of certain prearranged lengths and the latter as well as the former were limited by mechanical bounds. The reason for thus limiting the compared movement is the following: if the subject merely tries to make a movement that seems like the standard movement his mental process has to be a complicated one; first, he has to estimate the size of the movement he is trying to reproduce, and second, he has, or ought, to judge how nearly his actual movement has approximated that which he intended, for these two are by no means always identical. Some of the errors of over- and under-estimation in the work of previous writers are probably due to the subjects' neglect to notice how their movement executed compared with the movement intended.

The right forearm moved in a horizontal plane about the axis of the elbow-joint, and between vertical rods, which limited the movements in both directions. The standard movement was through 10 cm. at the tip of the middle finger, while the compared movements ranged from 9.2 to 10.8 cm., by steps of 2 mm. Each comparison was made twice, once with the standard and again with the compared, as the first interval. A series consisted of ten such double sets, or 180 judgments. Series were taken with active and passive movements, against inertia and with inertia, starting with different angular positions of the elbow, and with different speeds. The results show that changes in the initial position of the arm or in the inertia against which or with which the arm moved, had no appreciable effect on the accuracy of estimation. The estimation was also the same in passive as in active movements. Differences in speed, on the contrary, markedly affect the estimation; and the more rapid movements were overestimated. It appeared from a special series that was taken that speed is of importance in affecting the estimation only when it is greater than the speed of the subject's natural rhythm. The bearing of these results on those of other experimenters is interestingly discussed. The author agrees with Goldscheiner that the estimation of movement depends on joint-sensations. The author proposes two theoretical possibilities for explaining the overestimation of rapid movements: firstly, "that the two joint surfaces move over each other more rapidly, . . . so that necessarily in the unit of time more sensory end-organs of the joint-surfaces are stimulated than would be in slower movements. These differences in the temporal relations of the physiological excitation may be the cause of the overestimation." Or it might be that on the cessation of movement some sort of jar occasions a sudden increase of the mutual pressure between the joint surfaces. Then by a sort of irradia-

tion there might be an excitation of end-organs not directly stimulated, and these would be precisely the end-organs which would have been directly stimulated if the movement had continued farther. The author lays rather more stress on the latter hypothesis, of irradiation, than on the former. The theoretical discussion is clear and interesting, and brings to mention a considerable literature.

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Vergleichende Bestimmungen der Peripheriewerte des trichromatischen und des deutanopischen Auges. ROSWELL PARKER ANGIER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 37, 1904. S. 401-413.

Visual stimuli of a given intensity appear colorless on the periphery of the retina, but they appear of different intensities. The different intensities in which the colors of the spectrum are so seen have been called by von Kries '*Peripheriewerte*.' These values are not the same as the series of gray-values in which a dim spectrum is seen by the (periphery of the) dark-adapted eye. Values of this latter series are called '*Dämmerungswerte*.'

Now for the normal eye the periphery-values are not the same as the twilight-values. The twilight-values are, however, virtually the same for both normal and all the kinds of color-blind eyes. But von Kries has demonstrated that the periphery-values are different for the normal and the protanopic (red-blind) eyes, and the present paper takes up this same point, hitherto uninvestigated, with regard to the normal and the deutanopic (green-blind) eyes. The periphery-values were found by producing a spot of spectral light on a moderately illuminated gray field. Spot and field were then observed peripherally and the luminosity of the colored spot varied until the gray sensation that it gave appeared equally intense with that of the field. For purposes of comparison careful determinations were made of the periphery-values on three normal subjects as well as on a deutanopic subject (Professor Nagel). The resulting tables and curves show that for the deutanope the brightest point of the spectrum (seen peripherally) lies at wave-length 601, while for the normal eye it lies at 581; and these figures compare interestingly with von Kries's determinations for the protanopic eye, where the greatest periphery-value was found to be at wave-length 557. The periphery-values for the deutanopic eye in question were found to be approximately the same as the distribution of brightnesses in the spectrum as seen (in colors) by the fovea.

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Beobachtungen an einem Fall von totaler Farbenblindheit des Netzhaut-zentrums in einem und von Violetblindheit des anderen Auges. DR. HANS PIPER. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 38, 1905, S. 155.

This paper is of special interest because the subject investigated possessed two kinds of color-blindness, along with fairly correct color vision

on the peripheral portion of one eye. So complicated a case brings out the imperfection of the ordinary color tests. Since in the right eye the defects of vision were mainly confined to the retina, the Holmgren skein-method, for instance, would have made the vision seem more adequate than it was. The subject was able out of twenty skeins of greenish tone to lay the yellower tones in one pile and the bluer ones in another. The green and violet test-skeins, however, were not correctly matched. The test with Stilling's tables would have shown the subject to be totally color-blind! Nagel's tables showed the fovea of the right eye to be totally color-blind, while the left eye was somewhat better off. Since the peripheral portions of both retinae were but slightly defective, the subject was able to afford interesting data as to the color of spectral lights seen foveally; for the right fovea, for instance, he declared that the boundary between green and blue lay at a point which is distinctly more yellow than green for the normal eye. A table of comparisons by the two eyes is given of colors of various wave-lengths.

The time and range of dark-adaptation of both peripheries were wholly normal. The sensitiveness to brightness-differences was also normal. Then, moreover, "all the color equations between homogeneous or mixed lights which were valid for my normal eye were also acknowledged to be correct by the color-blind subject. . . . Doubtless this result strongly favors the view that we have here to do with reduction types of the normal color apparatus." The right fovea, although totally color-blind, showed (when light adapted) the same stimulation values as the normal fovea, that is, the brightness values for this color-blind fovea had the same distribution as they have when the spectrum is seen in colors by the normal (light adapted) fovea. In other words, 'the relative irritability of the central cones has remained quantitatively the same, although the power of distinct color perception is wholly absent.' The left foveal region was found to yield a dichromatic system and was, in fact, violet-blind, or tritanopic.

This violet-blindness ranges itself easily under the Young-Helmholtz three-color theory, and is closely comparable to the case described by König. "The explanation for the total color-blindness of the cone apparatus [in the right fovea] whereby the color qualities of the light sensations are completely absent, while the brightness values remain, can hardly be deduced from the Young-Helmholtz theory as at present conceived: for according to this theory, in the absence of all three components of the color apparatus, not total color-blindness, but absolute blindness of the cones would result. And we should expect merely a persistence of the rod functions, that is, typical color-blindness, with its characteristic brightness relations. For this case, therefore, some fundamental modifications of the Helmholtz theory must be proposed." The case is also incompatible with the Hering theory. "If the rod-theory is adduced as an explanation of typical, total color-blindness, and the doctrine of the specific brightness values of colors is dropped, then, indeed, the above findings are no longer at variance with the Hering theory."

The Place of Mental Imagery and Memory among Mental Functions.

F. KUHLMANN. *American Journal of Psychology*, Vol. XVI., No. 3, July, 1905. Pp. 337-356.

Dr. Kuhlmann considers these two topics in two main divisions: (1) The relation to the ability to learn and (2) the rôle in human life. Under (1) comes evolution as a method of race learning, the fact that the individual learns some things without conscious life and that the image is a factor in the ability to learn. Under (2) he notes the influence of language, the limitations of our immediate sensory data, and reason and science as a means of guiding conduct. The paper adds nothing to what is already known concerning the imaging function but well resumes the work of Bentley, Thorndike and others that closely touches upon this point. Of the nineteen pages of the article the direct quotations take up three and the rest is largely a résumé.

WILFRID LAY.

NEW YORK CITY.

JOURNALS AND NEW BOOKS

VIERTELJAHRSSCHRIFT FÜR WISSENSCHAFTLICHE PHILOSOPHIE UND SOZIOLOGIE, August, 1905. *Bemerkungen über die Metaphysik in der Ostwald'schen Energetik* (pp. 287-333): F. W. ADLER. - From the standpoint of Mach and Avenarius Ostwald's theory of energy is metaphysical in that it goes beyond the 'Prinzipialkoordinationen' in which 'I' am 'central member,' and, in place of hypotheses or expectations of the 'I,' 'introjects' energy as substance, a permanent possibility in things-in-themselves. For Mach, as exemplified in his definition of mass, the laws of nature alone are substantial (*i. e.*, permanent). Ostwald's distinction between intensities and capacities is quite arbitrary. *N. W. Bugajew und die idealistischen Probleme der Moskaner mathematischen Schule* (pp. 336-387): W. ALEXEJEFF. - Bugajew's life and publications. The true scientific and philosophic world-view can come only through the simultaneous application of (1) mathematical analysis, which exhibits the continuity of phenomena, the inflexibility of their laws, which grasps their elements, combines them, and presents their whole past and future, and of (2) arithmology, which deals with the esthetic and ethical sides of the world, with individuality and freedom. *Ueber Lehren vom Wesen des Seins, besonders in neuester Zeit* (pp. 389-420): K. GEISLER. - A survey of the uses of the term 'being' throughout the history of philosophy, closing with the author's position, that, though we speak of different degrees or grades of being, the actual being we mean is nothing but the relations between those several grades of being. *Besprechungen*—W. Lexis, *Abhandlungen zur Theorie der Bevölkerungs- und Moralstatistik*: F. OPPENHEIMER. K. Joël, *Nietzsche und die Romantik*: R. RICHTER. F. Jodl, *Ludwig Feuerbach*: R. RICHTER. J. Freudenthal, *Spinoza, sein Leben und seine Lehre*: R. RICHTER.

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- Romundt, H. *Kants Kritik der reinen Vernunft abgekürzt auf Grund ihrer Entstehungsgeschichte.* Gotha: E. F. Thienemann. 1905.
- Solmi, E. *Nuovi studi sulla filosofia naturale di Leonardo da Vinci.* Modena: G. T. Vincenze e Nip. 1905.

NOTES AND NEWS

THE British Academy has just issued the first volume of its proceedings. Among the papers, we note the following as of especial interest to readers of this JOURNAL: 'Idealism and the Theory of Knowledge,' by Professor Edward Caird; 'The Centenary of Kant's Death,' by Mr. Shadworth Hodgson; and 'John Locke as a Factor in Modern Thought,' by Professor A. Campbell Fraser.

THE 'Buddhistischer Verlag,' in Leipzig, publishes *Der Buddhist*, edited by Karl B. Seidenstricker. There is a supplementary sheet entitled *Die Buddhistische Welt*. The purpose of the journal is to make the western world better acquainted with Buddhism, and the publications promise valuable contributions to the study of comparative religion.

PROFESSOR HOWARD C. WARREN, of Princeton University, withdraws from the position of business manager of the publications of *The Psychological Review*. He will be succeeded by Dr. J. W. Baird, of the Johns Hopkins University. Professor Warren retains his editorial position on *The Psychological Bulletin* and *The Psychological Index*.

VOLUME V. of the proceedings of the Aristotelian Society has been issued by Williams and Norgate. The volume comprises the papers read during 1904-5, an abstract of minutes, and the report of the executive committee.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

ASSOCIATION AND ATOMISM

NOWADAYS, as soon as the much-despised associationist view dares to raise its head, down comes upon it, with many a flourish, the club of atomism. We are willing to yield the space of a chapter to a discussion of association; but association as a basic principle is generally considered as obsolete. For will not association throw us back to the time

“When nature underneath a heap
Of jarring atoms lay,”

and before the time when the ‘tuneful voice’ was heard with its harmony? And so association still struggles on with its old man of the mountain. Attacks are made usually against the older view of association. But there is a newer view which is, I think, a valid one. Before presenting this newer conception, I think it advisable to show the atomism inherent in the older and much-abused standpoint of the English school.

What can be more evident than the fact that—pile idea upon idea as high as we will—we have still a series of discrete units, and, *granted their separation*, by no amount of fusion, or amalgamation, or agglutination, can we form a unitary consciousness. Twist and turn as we may, there still remains before us a series of disconnected ideas, and no force, ‘gentle’ or otherwise, will satisfy us as a means of their connection. And is such connection, moreover, possible? Does not the mere acknowledgment of a connection force upon us the notion of infinite disconnectedness? Instead of bringing our various ideas together, sausage-fashion, are we not forever separating them by this means? For, *granted these self-sufficient ideas*, all we can have between any two ideas is a point of contact, but no real connection; which point of contact must have some intermediary, and so on *ad infinitum*. From this standpoint, at least, so it seems to me, association must lead to atomism.

No better presentation of the purely associationist-atomistic stand-

point can be found than in Mill's 'Analysis.' Criticize Mill and his coworkers as we will, we must at least acknowledge that no one has followed his treatment with more rigorous consistency than he. While his basic view, when generally stated, is much like many treated in separate chapters in some present-day psychologies, these very psychologists hold up their hands with an 'O horrible!' at his conclusions. Mill at least is consistent, whatever else he may be. No one sets forth the atomism inherent in his associationism better than he and no statement is a better argument against his own position than his own statement. Let us examine his clearly expressed position:

"Some of the most familiar objects," says he, "with which we are acquainted furnish instances of these unions of complex and duplex ideas. Brick is one complex idea, mortar is another complex idea; these ideas with ideas of position and quantity compose my idea of a wall. My idea of a plank is a complex idea, my idea of a rafter is a complex idea, my idea of a nail is a complex idea. These, united with the same ideas of position and quantity, compose my duplex idea of a floor. In the same manner, my complex idea of glass, and wood, and others, compose my idea of a house, which is made up of various duplex ideas. How many complex or duplex ideas are all united in the idea furniture? How many more in the idea merchandise? How many more in the idea called Every Thing?" How many, indeed! Mill would well fill our 'empty cabinets.'¹

It is against associationism of this kind that so much thunder of the present time is directed. The great James attacks the associationists as if they owed him money,² Stout repudiates his predecessors,³ and we find attempts made to introduce other views, those of schematic and implicit apprehension,⁴ of 'intellectual effort,'⁵ voluntary connection of ideas,⁶ and so on. No one to-day would venture to give an atomistic view so baldly stated as that of Mill. But because untenable *views* of association are wrong, it does not necessarily follow that *associationism* can not be upheld. A closer study of consciousness is necessary, and if the analysis as given by the English school is not adequate as a representation of the facts in the case,

¹ 'Analysis,' I., pp. 115-116.

² See 'Principles of Psychology,' I., pp. 2, 3, 160-161, 162, 192, 196, 230, 236, 237, 244, 254, 277, 279, 336, 344, 347-360, 480, 484, 492, 497, 499, 592, 649, and II., pp. 5, 45, 83, 423, 590, 602.

³ See his 'Manual,' 2d Ed., pp. 116-126.

⁴ Stout, 'Analytical Psychology,' I., pp. 78-97.

⁵ Bergson, 'L'Effort Intellectuel,' *Revue Philosophique*, 53, 1902.

⁶ Witasek, 'Ueber willkürliche Vorstellungs-verbinding,' *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, 12 Bd., 1896.

instead of repudiating the facts, it seems more profitable to make a new analysis, to try again.

So much has been done in the collection of data in various fields, and by scientific methods, that a sufficiently large field has been opened for examination, as regards a theory of association. What makes these data especially valuable is the fact that they have been gathered for different purposes. Thorndike has tried his experiments on the cat,⁷ and has found, not a static moment, but a tendency towards serial reaction to a given situation. Münsterberg has established the existence of a *Konstellation* rather than of a solitary 'idea' in ideal revival.⁸ In a careful series of experiments, Binet has brought out that in recalling a series of words, such words tend to cluster around a 'theme,' instead of being disconnected.⁹ Müller and Pilzecker have put to the test of experiment the '*initiale Reproduktionstendenz*' and have established the fact that in recalling a line of poetry by means of some word given, we recall not necessarily what immediately follows, but frequently the first member of the line leading to the word called out.¹⁰ In a series of tests I have found this same tendency present. These different facts, brought to light by investigators working on different problems and independent of one another, all agree in that they show the falsity of atomism (implicitly), and in that they likewise emphasize to one who studies them and works to verify them by analysis and experiment, that association, if it is to accord with the facts, must be treated from a new point of view, and that not atomistic as of old.

From a purely analytic standpoint, agreement with all that has been presented above is found in Stout's summary of his treatment of implicit apprehension. In any present moment he finds, "(1) It is impossible to distinguish and identify a whole without apprehending any of its constituent details. (2) This is not an awareness of form or combination apart from that of elements combined. . . . (3) The distinctionless unity of the whole tends to pass into multiplicity as the mind dwells on it. (4) This tendency is also a feeling of tendency—a peculiar experience. . . . (5) This circumstance suggests a name for that apprehension of a whole which takes place without discernment of its parts. We may call it *implicit* apprehension. In so far as the compound parts become discernible, implicit apprehension becomes *explicit*."¹¹ In this statement, finally, we have another careful analysis of the present moment agreeing

⁷ See his 'Animal Intelligence,' pp. 65-95.

⁸ See his 'Beiträge,' Heft 4, pp. 23-27.

⁹ See his 'L'Etude Experimentale de l'Intelligence,' ch. 4.

¹⁰ See their 'Experimentelle Beiträge zur Lehre vom Gedächtniss,' ch 6.

¹¹ See his 'Analytic Psychology,' I., ch. IV.

essentially with what has been given by the above-mentioned investigators.

This explication and differentiation of a present moment has been well brought out on the motor side by Baldwin. He represents the motor processes in attention by the formula $A + a + a'$, in which A represents the undifferentiated attitude, a the general sense accommodation, and a' the adjustments and shades of reaction peculiar to the object at hand.¹² He finds 'no support for the current view . . . that voluntary combinations are gradually built up by adding up earlier voluntary movements, muscle to muscle, and group to group.' We have further evidence in Baldwin's investigations of the process from an undifferentiated whole towards serial adjustments.

The facts thus far given, it seems to me, point to a view of consciousness directly the reverse of that given by Mill. Instead of considering the present moment as an agglutination of sense elements, we must, at any moment, view it as one whole,¹³ out of which, by a process of differentiation, the sense elements are plucked, *in abstracto*, as it were. Instead of having a process of *association*, we have rather a series of *disassociations*, through serial reaction, motor adjustments and the like. My attitude taken at first to an undifferentiated totality (such totality being a given situation, sentence, word, etc.) tends towards finer adjustments, towards the explication of the present moment in serial order. And such explicit series, being developed *out of* the previously undifferentiated whole, necessarily belongs to it, returns and gives a fuller content, a fuller meaning to this totality. And only in so far as the series belongs to it, is associated with it in every possible manner, have we unity. Unity, therefore, depends upon this association, and atomism, instead of resulting from association, is inevitable without it. What we have in a present moment is not so much an isolated idea, but rather an entire attitude, a total disposition; such disposition being an entire system with emphasis upon some aspect, a word with its meaning, together with forward and initial tendencies, and so on.

An entirely new interpretation of the present moment of consciousness is necessary if we are adequately to represent the facts as thus far presented. Mill's building-up process may be all right in the regions of Alice and her looking-glass, but they seem rather topsyturvy in the light of present experimentation. The present moment of consciousness is not a conglomeration of sense elements which, previously existent, have by some force grown into a complete whole. Any succeeding elements arising out of the present moment

¹² See his 'Mental Development,' ch. X., sec. 3.

¹³ See my 'Consciousness and its Object,' Pt. III., *Psychological Review*, July, 1905.

do so in virtue of the fact that there has already been explicated a series of attitudes, reactions, etc., which have developed the meaning of the present moment, have yielded to it content and have given rise to the possibility of concomitant or serial revival. The whole process leading up to the present moment is a genetic one, and by a residual process of development and accumulation, it enables serial revival to take place. What we have in any present moment is a single attitude, such attitude tending towards serial explication under guidance of the ideational content to which it gives meaning, and by which series of adjustments fuller meaning and wider content may be acquired; and such moment on its ideational side need not be a single 'idea,' but may be an entire disposition, a complete system, with various connections and interrelations.

It is this newer conception of the conscious moment which necessitates a fresh analysis of the facts of association. Much energy has been spent in gathering data and classifying them under various 'forms,' each system more fearful and wonderful than the preceding; while, on the other hand, we have rather hair-splitting arguments concerning the 'laws' of association. And all the while, what association itself is, or what analysis will fit the facts as presented, is cheerily left aside or totally neglected. It has always seemed to me rather queer that various tests have been made on certain aspects of consciousness, without a careful analysis of the very facts to be investigated. Many seem to fight shy of such analysis through fear of being dubbed 'logical' or, worse, 'philosophical.' Now the connotation of terms, it seems to me, which are supposed to cover certain cases, is just as important as their denotation, and to spread out a number of examples, *ad infinitum*, and say, Behold, here is a new discovery, here is association, or what not, is a method of proceeding like that of Dandy Dinmont who distinguished his dogs by calling them old Pepper and old Mustard, young Pepper and young Mustard and little Pepper and little Mustard. We must have data, but such data must be analyzed, and mere enumeration is not the whole part of the psychologist's work. Association as such has suffered greatly from this tendency, and to make matters worse, the attempt to do away with the 'laws' by substitution of 'forms' has shut out the point of issue altogether, What is association?

It is association itself with which I wish here to deal, and association, not atomistic in the old sense, but functional in the newer sense. I shall therefore leave to one side the question of its laws, or its forms. Titchener has called the expression 'association of ideas,' 'one of the most familiar and one of the most slippery phrases' found in psychology. This, it seems to me, is a good sign, for it shows that new facts have been and are being continually found,

which necessitate a continual change of meaning in the expression. But the older connotations 'cling round it still,' and by getting in the way sometimes cause confusion. It is rather interesting to follow the evolution of the treatment of association, the more so since in a rather casual and haphazard way modern writers (some of them) pick out what seems to suit their fancy, and then proceed laboriously to show why either one or both laws are basic, or perhaps why there are no laws at all, but only forms of association.

The early and now more or less extinct faculty psychology in mentioning association, considered it as a sort of power apart from the ideas, or treated it as a kind of explanatory principle. Of course this seems absurd now, and few will now advance the position that there is a loose power buzzing about in our heads, hooking and unhooking here and there whatever suits its 'fancy' or its 'reason.' But is it not to be found in a somewhat changed form in the strenuous theorists who place 'will' back of everything, and indulge themselves in the pleasure of explaining what is unknown, by something which is more so? And do we not see the most 'modern' psychologist of to-day emphasize a theory of 'apperception' as a selecting and inhibiting principle? This, it seems to me, is not at all changing the point of view of the faculty psychologists, but simply giving it another name.

Another point of view is the 'logical' which has its roots firmly planted in the English psychologies, and which bobs up serenely from time to time in modern treatises. This view of things is valid *as logic*, but it has nothing to do with the psychology of the matter. Association is here considered either as a connection between things, or as the things so connected. James has brought this out, as have Rabier and Bradley before him. The 'forms' of association given by Wundt and his followers are a conscious enlargement of this fault, a method of treatment which has tended to carry the problem out of the field of psychology altogether.

This logical view of association is like that of any other association of external objects, *e. g.*, a political association, etc. We call a member of such association an 'associate.' This has come to acquire a personal reference; which leaves only 'association' for the thing associated or connected. This view has also led to the formulation of the laws of contiguity and similarity with their endless reductions; and finally to the more rational 'forms' of association.

Now, in a series of conscious moments, treated psychologically, the states, *as states*, can not be treated in the logical manner unless we consider them as things, like any other external objects. We may logically classify a series of moments as visual, motor, etc., but this does not help us any as regards the fact of their succession. Nor

would a logical classification of the external objects denoted by such states give us any explanation of mental succession. Using a previously developed formula,¹⁴

$$\begin{array}{ccccccc} \text{an}, & \text{bm'n'}, & \text{cm'n'}, & \text{dm'n'}, & \text{em'n'}, & \dots, & \text{pm}^n \\ \swarrow \searrow & \swarrow \searrow & \swarrow \searrow & \swarrow \searrow & \swarrow \searrow & & \\ 1, 1', 1'' & 2, 2', 2'' & 3, 3', 3'' & 4, 4', 4'' & 5, 5', 5'' & \dots, & z, z', z'' \end{array} \begin{array}{l} = \text{mental succession} \\ \\ \\ \\ \\ \\ = \text{objects} \end{array}$$

the objects, *as objects*, represented by such states (1, 1', 1'', etc.) may or may not be 'similar,' may or may not be 'contiguous,' in fact, *as objects*, may never have been experienced before. While the states, *as states*, may be similar or may not be so. When we treat them logically, as Galton, for example, has done, we classify them as objects, and call them visual, auditory and the like. When we consider the objects we pursue a similar plan. But, *as psychological states*, they still remain the problem which they were at the starting-point, their *succession* remains still unexplained. I do not wish here to develop this point further, since this would lead me into the mazes of 'reduction,' 'laws,' 'forms,' etc., which I wish to leave for another paper.

A third view of association is the one which we may call the atomistic and 'popular.' In this aspect, association is considered as a cause or as an effect. As a cause it is considered (1) as a form of neural connection (the sausage-link idea), or (2) as a form of psychic connection. As an effect, it is treated (1) as the last member connected, (2) as both members of the association (the stimulus and the associated idea), or as both members plus their connection and (3) as a form of free revival as opposed to 'complication,' 'assimilation' and the like.

I think it necessary, however, to discard any analysis which implies atomism and which is directly opposed to the facts, and if association is not to be cast aside, if it is to be treated with its former respect, it must be defined anew.

There are two aspects of association to which in any discussion, more or less emphasis is given, or more or less neglect is paid. First, we may try to formulate a theory by analysis of the present moment as a development of past experiences. Second, we may consider association as free revival. In the former case, emphasis is laid on the first member in the revival; in the latter, consideration is paid to the *second member*, in relation to the first. In the former case, we have an arrow pointing from the past to the present; in the latter, this reference tends to disregard the past, and the arrow points from the present futureward. In the former case, we must consider the different forms of assimilation, complication and the like; in the latter, free revival alone is, it seems to me, rather narrowly treated as association. I shall try to give emphasis to both aspects.

¹⁴ See my 'Unity of Mental Life,' this JOURNAL, Vol. II., No. 18.

Now, viewing the present moment in the light above shown (see pp. 3 and 4), and representing this by $p m^x n^y$, this present moment, with all its meaning, with the concomitant attitude, with its tendencies 'initial' and 'fromward,' may be considered as an immediate 'cause' of what succeeds, and also as a development of all that has gone before. Considered as a cause in this sense, association I would define as the *functional development of a psychophysical disposition*. In this development, moreover, I would consider not only the development as such, but also any interconnection with other dispositions which may be present, the impulse or tendency of the revived state to pass on to another, and its tendency to leave a trace of itself for future revival.

In the second aspect, association is treated as free revival and the second member is emphasized. Now this second member may be considered as *implicit* in the first, and not as something *added*; as a development *out of* the first, and not as something pasted on; as an explication of the first, rather than an agglutination; in short, as an effect. As an effect, therefore, I would define association as the *realization in serial order of the continuity implicit in the present moment*. As regards the members of any association considered *in abstracto*, I think we can safely use the terminology employed by Cordes,¹⁵ to represent the first or the second member in free revival as the *A-phenomenon* or the *B-phenomenon*. The fusion, assimilation, complication, present in the A-phenomenon are those explained by Wundt.¹⁶

Gathering together any stray ends, we may represent association briefly as follows: Association, as A. The functional development of a psychophysical disposition, implying, (1) development, ((a) fusion, (b) assimilation, (c) complication); (2) interconnection (system); (3) impulse to pass on; (4) deposition of the whole as a trace. B. Serial revival of the continuity implicit in the present moment.

What has been briefly presented above seems rather simple; and to a casual reader may probably appear almost self-evident. But the implications in this point of view are far-reaching, and if fully explicated will, I think, do away with the hair-splitting 'reductions' to some 'law' or 'laws' of association as basic, and relegate the 'forms' to the logical domain where they belong. The treatment of those well-known 'laws' of association, contiguity, similarity, contrast and the rest, I have left to one side. My aim has been to clear

¹⁵ 'Experimentelle Untersuchungen über Association,' *Philosophische Studien*, Bd. 17, 1901.

¹⁶ 'Grundzüge,' III., pp. 526-544.

the way a little towards a fuller appreciation of what association is, preliminary to a more or less adequate discussion of its various 'laws' and 'forms.'

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THE PSYCHICAL COMPLEX CALLED AN INTEREST

THE psychologists of to-day have given up the theory of faculties of the mind and have substituted the concepts of processes such as associative, affective, volitional processes. They have discarded the notion of mental pigeonholes and speak of trains of thought, the stream of consciousness. Just as there are different kinds of processes, so there are different varieties of the groupings of ideas. The fundamental difference between the pigeonhole concept and the stream-of-consciousness concept is, that, whereas the first supposes facts, once made a part of consciousness, to return to consciousness, by the aid of an ego or will, identically the same, the latter recognizes that no two states of consciousness can ever be identical, and that they come back by virtue of some quality in themselves. The type of the old view is a memory, of the new, an interest.

To be sure, the concept of interests is more or less nebulous at present, as has been pointed out in a previous article,¹ no clear-cut distinction being made between interest and interests, neither has there been a careful analysis when it is obviously one or the other which is meant. In the above-mentioned article an attempt has already been made to show that interest is one kind of attention, the attitude of mind where some idea or group of ideas is prepotent over its concomitants in arousing and controlling a consenting consciousness. For the present we shall only say that an interest is a train of ideas which is present when one is interested.

Every one knows in a general way what is meant when we speak of a man's interests. We say of a man he has a real interest in the work of the church, in his family, in his profession, etc. We mean that he has thoroughly organized and permanently established trains of thought, certain emotional experiences, and regular modes of action which can be called into consciousness by certain stimuli, in themselves perhaps insignificant. As James says:² "In mature age we have generally selected those stimuli which are connected with one or more so-called permanent interests, and our attention has grown irresponsive to the rest."

¹ Boggs, 'The Attitude of Mind Called Interest,' this JOURNAL, Vol. I., No. 16.

² James, 'Principles of Psychology,' Vol. I., p. 417.

Although in a general way we know what we mean by interests, still, from the multiplicity and variety of its meanings differences have arisen in its interpretation by different writers, and it is not a mere coincidence that the psychologists who have treated interests most systematically are the ones who have also directed their studies to the subject of education, for they have discovered that interest is the correct form of attention which insures sound and rapid learning, and they regard the organization and formation of interests as the chief end of education. Indeed, one psychological writer in speaking of the great reforms in the schools of the country, says: 'The change is largely attributable to the illumination which has come from psychologists regarding the nature and meaning of interests.' Herbart, who first introduced the concept of interest, writes of it as self-activity, and divides the interests of the human mind into six classes: the empirical, the speculative, the esthetic, the sympathetic, the social and the religious. This is an admirable classification in some ways, but it seems to unite the idea of different sorts of mental activity with the idea of different fields of thought. Dewey writes:³ 'An interest is primarily a form of self-expressive activity.' This involves the idea of desire, which can not be abstracted 'from the active process of self-expression.' Baldwin writes:⁴ 'Suppose we begin by defining a man's interests as that which he wants and is willing to put forth some effort to obtain.' James says:⁵ 'Its own body, then, first of all, its friend next, and finally its spiritual dispositions, must be the supremely interesting objects for each human mind.'

Now what is the common factor in all these views? Obviously enough, it is the idea of self. Why not say an interest is a self? In a state of interest, consciousness becomes an apperceiving self which seeks to bring some relevant idea into a closer relation and make it a part of its own apperceptive self. Now it is true that in a state of interest, we are less conscious of ourselves as a self, distinguished from a not-self, as an ego distinguished from an outside world, than in almost any other state. The self idea is lost sight of in the content of consciousness. There is no thought that I am doing this, thinking that, apart from the content of consciousness, but my whole being is pouring itself out in one channel, and this is called self-activity, because consciousness is felt as a unity as regards the self and not-self. That it is called self-activity shows that one sometimes thinks of ideas, not a self, being active and working by their own force as well as the ego, the self. Now, of

³ Dewey, 'Interest as Related to Will,' Herbart Year Book, 1895, p. 221.

⁴ Baldwin, 'Social and Ethical Interpretations,' p. 14.

⁵ James, 'Principles of Psychology,' Vol. I., p. 323.

course, in such a case it is only two sets of ideas blocking each other, the more habitual or emotional being the self, neither one having an idea sufficiently powerful to obtain control of the situation.

It is only by reflection and introspection that it has been seen that the state designated as interest is the whole of consciousness; the self working along one line as a unity so that it seems almost a paradox to say that when one is most truly one's self, one seems to be the least 'selfy.' So we have chosen the word 'interest' to designate the content of consciousness when the self is absent by virtue of its being the whole of consciousness. The central controlling idea is one very different from the self idea which tries to control consciousness in the state of voluntary attention, and from the self-idea on the verge of one of those tremendous decisions when one feels that against this self are arrayed 'the world, the flesh and the devil,' and the entire force of one's nature seems to be concentrated in this self. Of course there are selfish interests when the thought of self is the controlling idea, me as a body, me as a parent, me as a teacher, but they are objects of thoughts in no way to be identified with the active self, the thinking subject which holds in solution the opposing forces of consciousness and can by its own force control the issue.

In a state of interest the self is a sort of a submerged self. We say, 'I am interested,' 'the thing interests me,' 'the thing is full of interest for me,' the only difference being the degree with which we feel that the self is involved, the degree with which we give ourselves up to the object. From attributing the power to the ideas to control us, we speak of them as possessing interest, and it is in this sense that interest has been used so much, as if it were some innate quality of an idea or topic. As a concrete term it is out of place, but we can not object to its use as a general name and agree with James when he says:⁶ "If one must have a single name for the conditions upon which the impulsive and inhibitive quality of objects depends, one had better call it their interest. The interesting is a title which covers not only the pleasant and the painful, but also the morbidly fascinating, the tediously haunting, and even the simply habitual, inasmuch as the attention usually travels on habitual lines, and what we attend to and what interests us are synonymous terms." Ribot has selected this word also for the complex causes of attention:⁷ "We have endeavored to establish in the present work the thesis, that the immediate and necessary condition of attention in all its forms is interest—that is, natural or artificial emotional states—and that, further, its mechanism is motory. Attention is not a faculty, a special power, but a predominant intel-

⁶ James, 'Principles of Psychology,' Vol. II., p. 559.

⁷ Ribot, 'Attention,' p. 111.

lectual state, resulting from complex causes that induce a shorter or longer adaptation."

The failure to allow some other idea than the self-idea to be the supreme one is responsible for many pathological cases. Such people are continually thinking of 'me' as an active self, reducing it to its narrowest limitation and holding it firmly against all other ideas. The remedy for this condition is in just the opposite way of treating one's self which Mrs. Call describes:⁸ "At first it seems impossible to hold one object in mind for a minute, but the powers grow rapidly as we learn the natural way of concentrating, and instead of trying to hold on to our subject, allow the subject to hold us by refusing entrance to every other thought. In the latter case one suggestion follows another with an ease and pleasantness which remind one of walking through new paths and seeing on every side something fresh and unexpected." The real secret of Christian Science is just this surrender of the thought of a suffering, acting self for some other idea. A patient feels that his acting self is helpless and lets in the idea of God's goodness, or whatever the healer may suggest.

In résumé we may say that the relation of self and an interest is this: an interest is a train of thought with some prepotent idea occupying and controlling the whole of consciousness, and, therefore, it is for the time being the self; but the prepotent idea is never the idea of an acting self; the acting self is submerged and some other idea takes the center of the stage.

The question comes naturally, what are the interests of the human mind, and whence do they come? We have noticed that different writers use interests and instincts interchangeably, which indicates at least a very close relationship. But though in actual life interests and instincts are merged into one another, the two concepts are entirely different; just as, *e. g.*, we find difficulty in distinguishing different greens and blues, though our concepts of the two are perfectly distinct. Take instinct in the usual meaning, a faculty for doing certain things without any foresight of the end or any practice in the doing of itself. According to psychology and practical life the important thing about a train of thought is its conclusion, its meaning. Now it is just this presence of the meaning which constitutes the prepotent idea of interest. We have, then, this difference: an instinct is a train of thought or line of action without foresight of the end or practice in the means; an interest is a train of thought which is controlled by the conclusion, by the end to be reached. A spider spinning its first web is a beautiful example of instinct; Marconi toiling over the wonderful problem of wireless communica-

⁸ Call, 'Power Through Repose,' p. 140.

tion is a splendid example of interest. Children come into the world with many instincts and develop many more as they go through the first years. Professor James thinks that man has more instincts than any animal, but says of interests that notwithstanding their great active energy, children have few organized interests by which to meet new impressions. The interests, he believes, have their origin in instincts, and not only the temporary interests, but also 'the permanent interests are themselves grounded in certain objects and relations in which our interest is immediate and instinctive.' The process of a child's mental development is the gradual building up of interests out of instincts. After certain ends have been attained through instinctive action, they become means to ends premeditated and desired. The transition from instincts to interests is the process of the initiative arising in the child, instead of coming from the environment to the child.

Concerning the continuity of the child's development from instincts, Baldwin has this to say:⁹ "First, we have found, in the preceding chapter on the 'Emotions,' that there is no break of an absolute kind between the epoch which, on the side of the instinctive life, we called respectively 'organic' and 'spontaneous'; and, on the other hand, there is likewise none between the spontaneous and the reflective epochs. This was made plain from two points of view: The emotional expressions of the organic epoch are utilized in the higher epochs by a natural transition from the lower to the higher type of function. Further, the child shows no great breaks in his development from instinct, through suggestion and direct imitation, to reflection, at least, on the side of the emotional movements of his modesty, sympathy, play activities, etc." Instincts are transitory, as is well known, and the interests immediately arising from them are temporary for the most part, few of the interests of adult life and old age being found in the child. However, in those people who keep young we do find just that, the same interests at seventy as at ten, though vastly modified and enriched through personal experience and social contact. On the other hand, the precocious child is one whose interests are those of matured years and indicate a too rapid development through the instinct stage.

But while interests are based on instincts, their development and organization are dependent on the stimuli which come to the child through contact with the objects of sense and with other personalities. Much of the work done along the line of child study has been to discover what objects of the senses are most attractive to the child, and a very important work it has been. The ideal way of educating a

⁹ Baldwin, 'Social and Ethical Interpretations,' p. 260.

child is to place him amidst a variety of objects and events so that there may be choice as to objects attended to. Learning to choose the objects of one's activity is of as much importance as putting forth the activity. In general one may say that the objects in which the child becomes interested are those which afford the largest, freest play of his ideas and muscles. These objects may gain this attractiveness from other objects already interesting, from the intensity of the sensations they give, from their being often before consciousness, from the pleasure or pain arising from them. Likewise the child is influenced by the people who seem to him most like what he wants to be, and so the principle of imitation comes into play.

As you are well aware, then, there are many different interests, as many as there are different subjects which occupy the mind, but one point must be made clear, namely, the organization of every interest is alike. As animals advance up the grade of intelligence, their lives become more and more complex. As the race becomes more civilized the minds of men become more complex, and so the child has inherited a brain which is capable of a rich and varied activity. In the multitude of impressions and ideas which swarm into the consciousness of the child some idea naturally becomes more powerful, and out of the confusion there arise order and organization. It is here that the work of education must come in. It is hard to make a child attend by mere command to this or that, but it is easy to follow a child's thoughts, wayward and fluctuating as they are, and by force of a larger experience and a stronger personality halt them here, direct them there, turn them into new channels or help find the old beaten paths, until the desired ideas have, through associations of every sort, gained a place of power in the never-ceasing flow of consciousness. If the child learns to depend on these ideas for his further guidance, to take the initiative in new experiences with the help of the old, he is on the road to a strong, independent life. The development of intelligence becomes the adjustment of ideas, and so we may define an interest as a complex of consciousness in which some idea or train of ideas is adjusting other ideas to itself. The man whose predominating ideas can awaken all the resources of previous experience, bring the relevant into close relationship, casting off at once the irrelevant, which can hold itself secure against all rivals in consciousness, which suffer decay only to spring up Phoenix-like, new born, again and again, with renewed vitality, which can find points of attachment in ideas which the rest of the world overlooks, striking out into new and unexplored paths, such a man is a man of the highest intelligence.

To sum up in a last word: An interest is a train of thought

having a central prepotent idea which arouses and organizes the relevant ideas into a permanent relation to itself. This central idea is one which gives to the whole of consciousness its meaning and it crystallizes itself into a conclusion which may be a practical resolve, a general notion, a solution of a problem or anything representing the ideal striven for. It may be likened to the gold of the psychological smelting process, always there but awaiting the refining process to become an available product for future use. An interest is a self in that it is the whole of consciousness, but the idea of self is conspicuous by its absence. So far as we know, all interests are a natural and logical development from instincts, though, owing to the transitoriness of instincts and the complexity of psychical life, the thread of connection is not always in evidence.

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DISCUSSION

THE ISSUE BETWEEN IDEALISM AND IMMEDIATE EMPIRICISM

THERE are, I am sure, many students of philosophy who are in sympathy with much that the 'newer' movement is accomplishing, and in particular with its insistence upon greater respect for experience, greater sobriety of philosophical construction, greater freedom of play for the individual, a fuller recognition of the thoroughgoing primacy of the practical, who are in sympathy with its humanism and anti-absolutism—not to speak of the life that it is injecting into the dry veins of epistemology—and yet who find themselves unable to follow its radicalism in a good portion of what it denies, or to accept its definition of what is left. Now it seems quite evident that we would come to a better mutual understanding if we should stop long enough over our fundamental conceptions and postulates and points of departure to clear away all initial ambiguities. It was with this end in view that I addressed my letter to Professor Dewey.¹ His reply² seems to me to preserve the ambiguities of his first statement,³ and to further confuse the issue.⁴ It is with the

¹ 'An Open Letter to Professor Dewey concerning Immediate Empiricism,' this JOURNAL, Vol. II., No. 10.

² 'Immediate Empiricism,' *Ib.*, Vol. II., No. 22.

³ 'The Postulate of Immediate Empiricism,' *Ib.*, Vol. II., No. 1.

⁴ As an illustration of the ambiguity referred to, take the following: "I do not understand the notion that because things of immediate experience are real, mediation can not be real" (p. 599). I do not either, and I wonder who

purpose of sharpening the issue between idealism and immediate empiricism that I continue the discussion.

The very term 'immediatism,' which Professor Dewey suggests to describe the 'newer' philosophy, promises to bring into relief the precise issue created by the radicals. And if we are to make any progress in our discussion, this issue should not be obscured by irrelevant cross-firing. We can at least be clear at the outset as to what the issue is not. It is certainly not an issue between immediatism and the sort of a thing reached by Professor Dewey's entertaining parable of the botanist. Such comments only divert attention from the point in dispute by firing at a man of straw. At least, in my reading of philosophy, I am unable to find any idealist who can fairly be charged with anything like the attempt to spin a botany out of concepts, although it must be admitted, every one, philosopher and scientist alike, is more or less chargeable with the human frailty of giving his well-grounded conceptions a larger scope than their actual grounding warrants. And, once for all, the immediatist should recognize the fact that the idealist does not hold that 'there is a world of pure delight' where categories immortal reign, far aloof from the world of experience. They live in experience and give it its meaning. And one can not evade the idealist's criticisms by tossing the critic up into the cold circumambient ether. The antithesis is not between a philosophy grounded in experience and a philosophy manufactured in a den of abstractions. For the idealist also holds that his philosophy is grounded in experience; from experience it starts, to experience it ever returns. But the difference comes out in the interpretation of the nature of experience. Experience is a treacherously ambiguous word. For the idealist, experience is always a complex of the immediately perceived and the mediately conceived, and that no matter how far one goes down the scale for his starting-point; and therefore immediatism of itself can supply neither starting-point nor method.

The very conception of immediatism as furnishing starting-point and method seems therefore to draw sharply the lines of the issue. But unfortunately the old ambiguity about experience forthwith creeps into Professor Dewey's account of immediatism. That conception seems to mean two very distinct things. One meaning seems formally in accord with radical empiricism, but deprives of meaning the quest after truth; the other restores the meaning of that quest

does. But if one first identifies 'reality,' the '*things of immediate experience*,' with the immediate experience, as the immediatist explicitly does (see Professor Dewey's original article), then it is hard to see how in that sense mediation can be real and still be mediation.

but only at the cost of abandoning the standpoint of radical empiricism.

The question is: How, strictly, are we to interpret the word 'immediate'? The illustration of the Zöllner lines seemed to leave no doubt as to the meaning intended. There, immediate experience is taken as the direct, unmediated, here-and-now experience. When, further, the real thing in question is postulated as one with the immediate experience so taken, and the thing is regarded as precisely what it is immediately experienced as, then in place of speaking of solving problems and correcting experience would it not be a more accurate description of the situation to say: In the process of evolution one immediate experience (reality) gives place to another immediate experience (reality)? Now it does not at all fit the case to declare, Johnsonian-wise, as Professor Dewey does: But there are real problems, and we do go to experience to solve them. Of course! But is it not true that the problem in each case is a real problem only because the real thing in question is viewed as *not* just what it is by me immediately experienced as?⁵

But at this juncture, and to make the postulate tally with the facts, does not Professor Dewey substitute another, and quite different, interpretation of immediate? It now appears that the immediate experience which shall be equivalent to the reality (of the seed, for example) is what I at present immediately experience it as, *plus* all that I have or shall experience it as, all that I might experience it as were my powers sharper, all that my fellow men experience or might experience it as; *plus*, furthermore, all its thought relations, all its linkages to other things, past and present, all the principles of such linkages. Over all these is thrown the blanket of immediacy. For we are informed that besides immediately experiencing the immediate, one immediately experiences mediation, one immediately experiences categories, concepts, continuity; and these things also really *are* just what they are immediately experienced as. And that, further, the immediate experience which shall be one with the reality of the thing experienced, includes the possible as well as the actual immediate experiences of these several kinds, seems clearly implied in the illustration given, for in the case of the seed one certainly conceives of its continuity of development, and its mediation with other experience, as real beyond the actual immediate experiences of any,

⁵ Professor Dewey insists that from the postulate of immediatism not a single philosophical conclusion can be drawn, and accuses me of assuming from the very notion what the character of experience shall be. I have assumed nothing whatever about the character of experience, except that if immediatism is to give us a new method we must be able to find our starting-point in immediacy. Experience does not give us such a starting-point.

or all, observers. But to call the object as conceived in its inmost structure, and placed in its total setting, the object as immediately experienced, is a confusing use of terms.

This shifting of the meaning of immediate is given plausibility by the fact that thoughts also, like things, and immediate experiences, actual or imagined, are together warm in the unity of one's own experience. The *ich denke*—however interpreted—is continuously present in all one's speculations; concepts are not out in the cold. But when one identifies the reality of the thing with the immediate experience taken in this comprehensive and pregnant sense, is this not equivalent to saying that the real thing is the thing as it might be immediately experienced by a universal thinker or experiencer viewing all things *totum simul*, after the manner of the Roycean absolute? This is not what immediate means when we refer to our own experience as immediate, for then the here and the now, and the negative prefix, are of the essence of the conception. And, taking immediacy in this enlarged and general sense, as noting that aspect of direct ownership, of personal appropriation, which is always found in concepts and principles of mediation, so far as these are given any definite meaning, quite as much as it is present in percepts—this is a fact fully taken into consideration by idealism, as well as the fact that 'conceptions enter into experience.'

What the idealist denies is that 'any single actual experience, as existent or as known, is immediate, and simply immediate.' Not that he denies immediacy, but that he affirms mediation to be equally fundamental. Nowhere in experience does he find sheer immediacy. Further, the principles of mediation can not be analyzed into immediate experiences without losing their unique meaning. He can not see any hope of success in the method of immediatism, since he can find no fact in experience of such a kind as facts must be if immediatism is ever to get a fair start. The facts of experience are one and all, and from first to last, tainted with mediation. One calls upon the experience philosopher to give us a method which recognizes this obvious fact. Otherwise, immediatism, as a method, seems as artificial, abstract, untrue to experience, as any barren conceptualism that can be imagined.⁶

⁶ The immediatist is fond of tautology. 'I don't see any way of experiencing the mediate,' writes Professor Dewey, 'excepting that of immediately experiencing it *as* what it is.' Having previously declared experience to mean immediate experience, this is idle declamation. The question is whether the principles of mediation (causality, for example), as we actually think them, and as we employ them in getting any definite experience, as well as in further defining and interpreting experience, can be adequately described wholly in terms of immediacy.

The question, in short, is: Precisely what does immediate mean in the latest formulation of the new philosophy; how strictly is it taken? If taken strictly, how does immediatism escape the fate of Hume? If loosely taken, how does immediatism differ from idealism after all? What we need is the immediatist's account of the 'categories,' the 'a priori,' the principles of mediation, by whatever name, in terms of immediacy strictly taken.

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REVIEWS AND ABSTRACTS OF LITERATURE

University of Iowa Studies in Psychology. IV. Psychological Review, Monograph Supplements. Vol. VI., No. 5, March, 1905. Pp. 118.

This number of the Monograph Supplements contains three papers from the Psychological Laboratory of the University of Iowa. The first paper, 'Perimetry of the Localization of Sound,' by Daniel Starch (pp. 1-45), aims to obtain an accurate measurement of our capacity to differentiate the directions of tonal stimuli and to determine what sense-data constitute the basis of auditory localization. The apparatus employed was a Seashore perimeter, the stimulus being supplied by an electric fork; the method was a modified form of the method of right and wrong cases. The experiments consisted in sounding the tone first from a standard and then from a comparative direction and asking the subject to report the relative direction of the second stimulus. It was found that errors were most numerous when both tones came from points in the median plane. But when one stimulus came from the median plane and the other from a point slightly temporalward from the first, the conditions for accurate discrimination of direction were optimal. Localization was slightly more accurate in the anterior than in the posterior quadrant; and the difference limen was relatively high when the stimuli came from the lateral regions of the field. A remarkable feature of Starch's results is his discovery that the progressive refinement of function from relative obtuseness in the shoulderward directions to relative acuteness before and behind, is by no means constant or uniform; the degrees of sensitivity determined at these and intermediate points are not to be represented graphically by anything approximating a regular curve, but by a series of abrupt troughs and crests. The difference limens of adjacent regions frequently differ by as much as 100 per cent., and in one instance (fig. 7) by 200 per cent. In order to account for this irregularity the author assumes the existence of a system of auditory local signs; he supposes that every auditory direction possesses its own peculiar shading of intensity, pitch and clang-tint. No attempt is made, however, to correlate these direction-marks with peculiarities of structure of the auditory organ, i. e., to refer the quantitative and qualitative differentiae which are held to be characteristic of a given direction to such phenomena of reinforcement and analysis as might be expected to result from the form

or inclination of that part of the curvilinear surface of the pinna upon which sound-waves from the given direction impinge. Nor is the reviewer convinced that the irregular distribution of sensitivity which Starch reports may not be due, in part at least, to the small and unsymmetrical dimensions of the room in which the experiments were conducted. Would this irregularity occur with localizations made in the open air or in a large room where the influence of reverberation from the walls, floor and ceiling is reduced to a minimum? Among the sense-data which might constitute a basis for the localization of auditory stimuli, Starch assigns a leading rôle to the intensity factor. Cutaneous and muscular sensations and apparent variations of pitch and clang-tint are also held to furnish a clue, and thus to render monaural localization possible.

In the second paper (pp. 47-101) Professor Seashore and Miss G. H. Kent report an investigation of the fluctuations of mental efficiency which occur during a prolonged period of mental work. A two-hour period was selected for investigation, and the mental work consisted in attending continuously to the tests which were employed in the successive determinations of the psychical efficiency. These determinations were made in a threefold manner: The subject's varying degree of sensibility was measured by determinations of the liminal intensity of a waxing and waning tone; his sensitivity was measured by his capacity to discriminate between tonal intensities; and his memory was tested by his ability to reproduce a series of tonal intensities in the order in which he had heard them. The results of the investigation show that periodicity is a characteristic of mental work; all three types of mental activity covered by the experiments manifest a well-marked recurrence of phase. The authors analyze this fluctuating wave of mental efficiency into three components or partials, which they designate, somewhat arbitrarily, second-waves, minute-waves and hour-waves. The second-wave has a maximum duration of only a few seconds,—its length being dependent upon the type of individual and the conditions of his work. This wave is itself composite; it is a resultant of relatively long waves of secondary passive attention and relatively short waves of active attention. The minute-waves may vary from a few seconds to twenty minutes in length. They are a function of practice and training; when the work is such as may be perfected by training, the minute-waves tend to disappear from the records. The causes which condition the hour-waves were not discovered; it was found, however, that their length tends to decrease as the work progresses. The authors call attention to a fourth type of wave,—the diurnal waves of efficiency, which are due to the refreshing influence of food, sleep and recreation.

The closing paper is an uninspired study by Dr. J. B. Miner of 'A Case of Vision Acquired in Adult Life' (pp. 103-118). Dr. Miner's patient was a young lady who had had a complete congenital cataract removed about three years before the present investigation was undertaken. The author proposes to 'utilize the modern laboratory equipment for testing systematically and quantitatively the senses and the learning

process of a blind person who has been made to see,' and incidentally to examine the validity of the popular tradition 'that the loss of sight in a blind person is compensated for by a greater keenness in the other senses.' But this program is unfortunately not carried out. The sensory tests instead of being systematic and quantitative are haphazard and inaccurate; and the results are recorded in such form that comparison with normal sensitivity is in most cases impossible. For instance, the problem of passive touch is dismissed with a single short sentence. The determinations of the limen of twoness 'were not numerous enough to be accurately stated.' The stimulus-limen of active touch is expressed in terms of the number of sheets of paper through which a fine wire could be felt,—a statement which is unmeaning as it stands, and no normal records are presented for comparison. No serious attempt seems to have been made to determine the kinesthetic sensitivity. The author reports that "with the tuning forks she distinguished, nine times out of ten, a difference of eight vibrations from the international *a* (435 vibrations). Tests with the audiometer also indicated that she was not far from the average in her discrimination and liminal (!) thresholds for sound." Other investigators have found that the normal difference limen for this region of the tonal scale is less than .3 vibrations; Dr. Miner confined his tests to a stimulus difference of eight vibrations and naïvely remarks that his patient's 'discrimination of simple tones was not unusually keen.' "Preliminary work with the spectroscope indicates that her spectrum is about one fifth longer than the average of ten students. The length is added to the violet end. I suspect that this difference is largely due to a difference of interest in the test (!)." "Accurate tests were made upon her ability to discriminate distances with both eyes compared with her monocular ability. Different sized balls were hung at varying distances from her. Using only one eye she judged them to be at the same distance when one was 15 cm. farther away. But the difference between the two balls was narrowed down to 6 cm. when both eyes were converged on one ball and then on the other." Just what this experiment is intended to demonstrate is not clear from the text. It seems unfortunate that Dr. Miner does not take the reader into his confidence at least to the extent of stating the sizes of the balls and the absolute distances at which they were suspended. The investigation of the *Lernprozess* is concerned for the most part with the development of space perception, and more particularly of tridimensionality and distance. The most interesting feature of this part of the study is the discovery that the early vision of the 'born-blind' is characterized by an utter absence of retinal rivalry, and a lack of fusion of the two retinal images. In her earlier experiments with the stereoscope each retinal image persisted independently of the other, and her visual objects appeared in duplicate. The author takes this result to mean that normal binocular vision is a capacity which one gradually acquires through experience.

Several printer's errors have crept into the text: 'irresistable' p. 72,

'breadth' (for 'breath') p. 72, 'eductional' (for 'educational') p. 118, and 'oculist' is spelled with a double 'c' on p. 112 and again on p. 114.

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What Pragmatism Is. C. S. PEIRCE. *The Monist*, April, 1905.

This article is the first of a series of three, and consists in an exposition of 'Pragmaticism.' It is to be followed by a second, presenting examples, and by a third, which is to furnish proof and establish the truth of Synecism. As a designation for his own views the author coins the term Pragmaticism, in place of Pragmatism, since the latter has become too broad.

The meaning of a concept is reduced to that which shall have a bearing on human conduct, and, since only experimental phenomena can have such a bearing, is confined to experimental phenomena. The significance of such phenomena is that they are general and lie in the future. Since they are general, they are not determined by this or that special purpose or accidental circumstance. They are, however, significant for rational purposes and conduct just because of this generality. Reality is defined as that which is independent of what you or I may think about it, and truth as that which represents reality. The laws of nature, for instance, are true and represent a real. Not all generals, of course, are real, nor, apparently, are all reals generals. But generals of the experimental type are real and constitute the only meanings of Pragmaticism. Pragmaticism aims at a rational conduct whereby these generals may become more and more embodied in reality, for generals are effective in the determination of human conduct.

Truth, again, is defined in terms of fixed belief, the fixation being the result of the continuation of an experimental process. It is similar to that ethical process whereby, from the anticipation of results and reflection upon them, action, by this process of self-control, becomes more and more free from the necessity of self-reproach upon reflection. It thus becomes fixed in character, or destined, and the process of self-control is no longer necessary.

As belief becomes fixed by this process of prevision and reflection, it becomes more and more independent of the accidental and merely individual, and when it has reached the point of absolute fixation, it is true and represents a real. Beliefs are thus of the habit type and mostly unconscious. Mr. Peirce emphasizes the necessity of accepting the most, at least, of our instinctive beliefs, and says that what one can not doubt must be for him the absolute truth. As I understand him, however, the mere fixation of belief by lack of stimulation or effort is not sufficient. The process is of such a type that no amount of individual aberration can prevent the final form of fixation. In this way the ultimate course of belief is destined.

The test of a concept, then, is not merely that it terminate actually or conceivably in a percept, nor that it be followed by action, but that

it represent a uniform process, that it have been built up into a fixed belief as a result of the experimental method, and that it be significant for the direction of rational conduct.

The system is thus opposed to a pure sensationism or voluntarism, but it would restrict the field of metaphysics to problems capable of solution by experimental methods.

What is the significance in this system of immediate experience and purpose? The test of a concept, at least, is that it be absolutely general, that it be indifferent to special purposes or circumstances, and the test of belief and so of truth is that it be fixed as a result of a process which is destined and is uninfluenced by individual aberration. If the reviewer correctly interprets certain forms of Pragmatism as making the criterion of truth significance for present purpose and not purpose in general, we would apparently have here a point of difference. If this process of fixation is to be absolute, must not all problems be settled before we can have a fixed belief, and so truth, and so reality of this type? Since belief tends to become unconscious as it becomes fixed, would not our test not only be in the future instead of the present, but also point to a condition of things in which experience itself had ceased to have significance and even to exist?

Reality is defined in terms of independence of what you or I may think about it, and fixed belief and so truth is said to represent reality. Probably Mr. Peirce does not intend to imply a correspondence test of truth, but if not, we still seem to have the difficulty cited above in regard to the test requiring a transcendence of individual and possibly of all experience.

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The Herbert Spencer Lecture, Delivered at Oxford, March 9, 1905, by
FREDERIC HARRISON. Oxford: The Clarendon Press.

Though Mr. Harrison is not a Spencerian, but a Positivist, this lecture was not intended to be controversial. By universal agreement Spencer must be considered a great philosopher; and, further, as a man with a purpose in life, from which he could not be distracted, and in which he persevered through an unrelenting pressure of physical ailments, a character of a very noble type. He is the only English synthetic philosopher. How much of his system, then, can be taken as permanent?

Spencer's definition of philosophy is correct. Philosophy is the generalization of all the sciences into their ultimate coordination. And synthesis means coordination. So far Spencer and Comte agree. Evolution (not in a sense commensurate with Darwinism) is Spencer's synthetic principle. But is philosophy the science of the sciences; is such a correlation of human knowledge either possible or needful? The vogue of Spencer, the craving of the mind for some coherent system, would indicate that an ultimate generalization of human science is possible.

But, again, is Spencer's generalization the correct one, and destined

to receive final acceptance? In six fundamental points in which it agrees with the Positive and all empirical systems, the answer must be, Yes. These fundamental points are: (1) *The universal reign of law*; (2) *the law of constant evolution, i. e.*, the development of each cognizable state from a preceding state; (3) the relativity of knowledge; (4) the relegation of unverifiable hypotheses to a world outside of positive science; (5) the aim of philosophy is a synthesis of the sciences; (6) the aim of life is the amelioration of the material, social and moral conditions of the human organization.

But evolution as an ultimate law is a paradox. Such a generalization of the cosmos is beyond the range of a relative mind. Spencer's evolutionary principles have an illuminating value for the sciences, but they leave no room for that order which is beneath all progress. They are limited by hypothesis to dynamical movements. But there is also a statics of the sciences, and this is probably more useful than the first. It is also extremely doubtful whether the principles of evolution can be applied to the inorganic sciences with advantage. Finally, no one set of laws can be applied to all sciences, both human and cosmic. To reason about the soul in terms of physics is materialism. The moral and the physical worlds are not reducible to the same terms. No one formula will explain the rotation of the earth and the French Revolution.

Another strange lacuna is the absence of any philosophy of history. Indeed, when one sees the enormous gaps and inconsistencies one doubts whether the very basis of the evolutionary system can be philosophically sound.

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The Knowledge of Good. W. R. SORLEY. *Hibbert Journal*, April, 1905, pp. 543-557.

This article, which is an address delivered before the St. Louis Congress last year, is essentially a discussion of the meaning and logical origin of the concept of goodness. Starting from the familiar division of judgments into those of facts and value, and noting cursorily the distinction of esthetic, logical and utilitarian values, the author passes to the consideration of the meaning of moral value, or goodness. His problem is, specifically, to determine whether this quality pertains to objects altogether out of relation to human life and purpose or whether it characterizes them only as produced by a good will. The answer to the problem is to be found by investigation of the actual function of the ethical judgment in experience. Appeal to this moral usage shows that although we find occasionally an arraignment of the course of nature by a Mill or a Huxley, yet it shows that such moral judgments are made only with the implication of nature as at least hypothetically manifesting purpose or serving as a standard of values. All the evidence is against the idea that goodness is a quality of things out of relation to self-conscious activity, and hence 'the peculiarity of the moral experience would seem

to be better brought out by the conception *ought* than by the conception *good*.' But to say that anything ought to be done seems to imply the previous goodness of the action independently of will. This is true, we must distinguish between the particular goodness for the individual and the goodness in general which is presupposed in it. The special obligation rests upon the individual only as his action is part of a large systematic purpose independent of his private will, but this larger good or purpose is evidently not independent of will in general. Our knowledge of good, therefore, is to be obtained only by the study and criticism of our moral judgments, since only in these purposeful reactions upon our experience is the good given.

While nothing can be said against the author's general conclusions on the subject of ethical method, some confusion is undoubtedly introduced into his discussion by his failure to distinguish between several quite distinct problems. First, is our attitude toward, and our judgment upon, rational and non-rational objects the same? Second, do objects or actions which are not the expression of purpose have the quality of goodness? Third, is goodness, wherever found, relative to an appreciative or practical consciousness? Professor Sorley seems to have considered only the first. He has shown readily enough that morality is a matter of purposeful action, but he has not shown that goodness is relative to an appreciative consciousness.

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The Method of a Metaphysic of Ethics. W. R. SORLEY. *Philosophical Review*, September, 1905, pp. 521-534.

This article is supplementary to that in the *Hibbert Journal* by the same author and defines the relation of his ethical method to metaphysics. Ethics must add to its history and description of the moral life a critical estimate of the value of its principles, and the question is as to whether this involves metaphysics and, if so, as to what is the nature of such a metaphysics. A metaphysic of ethics, in contrast to an ethical metaphysic, is one in which ethical principles are based upon a general theory of reality, but there are quite distinct types of such systems. Kant's theory is really an ethical metaphysic, the conception of reality being drawn from an analysis of moral experience. Hegel gives us perhaps the traditional type of a metaphysical ethics in that the general principles of the science are derived, professedly without appeal to experience, from the abstract conception of being. By a purely logical process reality is shown to involve in its nature the idea of moral experience. The system of T. H. Green is typical of a more legitimate metaphysical method. The eternal self is not a conception derived from a consideration of non-ethical reality, but a principle implied in all experience, cognitive and practical. "Green recognizes quite clearly that a metaphysical theory of ethics is not a mere deduction from metaphysical principles of a non-ethical kind. It is concerned with the facts of moral experience; these

belong to its data; and it has to find a conception which will express their nature and without which their nature can not be expressed." The weakness of Green's system is not in its method, but in the inadequacy of the concept chosen to express the nature of morality and in its failure to recognize the place of moral approbation in our experience.

The author's distinctions of method are undoubtedly just, but one might pertinently ask why Green's system, as thus characterized, does not belong to the class of ethical metaphysics rather than to that of metaphysical ethics. To be sure, its starting-point is cognitive and moral experience, but it is experience none the less, and its method is to be distinguished sharply from that of a logical deduction from abstract conceptions of reality. One must prefer the more distinct conception of metaphysical ethics discussed in Taylor's 'Problem of Conduct,' a discussion which probably gave rise to this present article.

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JOURNALS AND NEW BOOKS

ZEITSCHRIFT FÜR PHILOSOPHIE UND PHILOSOPHISCHE KRITIK. Bd. CXXVII, Heft 1. *Ueber Musikalische Einfühlung* (pp. 1-18): H. SIEBECK. — The esthetic effect of music, as distinguished from the mere passive response thereto, requires an emotional activity, essentially imitative in character, together with the definite objectification and personification of the piece; to which imagined object, then, the emotion, as '*Einfühlung*,' pertains. The emotions really determined by the nature of a musical presentation are, on the one hand, but few among the emotions we experience in life; on the other, they contain shades of feeling never before experienced. Musical *Einfühlung* differs from others, in that it is more truly constitutive, rather than merely interpretative of the 'object,' i. e., the piece. *Zur Begründung des Theismus* (pp. 18-34): K. ANDRESEN. — An answer to Korwan's development of von Hartmann's pantheism. Numerous logical issues are raised, but fundamentally it is maintained that to take as the beginning of the world process a merely potential union of will and *Vorstellung*, of which that process is the realization, is to overlook the nature of will, that it presupposes a partial union with the idea. Further, Hartmann's pessimistic account of the world proceeds from an estimate of it in terms of pleasure, instead of in terms of purpose. *Das Raumproblem (Eine unparteiische Kritik der Metageometrie)* (pp. 34-43): W. PAILLER. — A discussion of the mutual compatability of the axioms of non-euclidean geometry. *Bericht über die italienische philosophische Literatur der Jahre 1903 und 1904* (pp. 43-67): C. D. PFLAUM. — No work is singled out for special attention. Rezensionen—Schuppe, *Der Zusammenhang von Leib und Seele*: DÜRR. Adamkiewicz, *Die Grosshirnrinde als Organ der Seele*: DÜRR. Kowalewski, *Studien zur Psychologie des Pessimismus*: DÜRR. H.

Cornelius, *Einleitung in die Philosophie*: HALPERN. B. Erdmann, *Ueber Inhalt und Geltung des Kausalgesetzes*: E. WENTSCHER. M. Foucault, *La psychophysique*: A. KOWALEWSKI. M. Dessoir u. P. Menzer, *Philosophisches Lesebuch*; A. Gille, *Philosophisches Lesebuch in systematischer Anordnung*: A. MESSER. F. Mauthner, *Beiträge zu einer Kritik der Sprache*: W. UHL. Selbstausgabe. Nachtrag. Notizen. Neu eingegangene Schriften. Aus Zeitschriften.

Baumann, J. *Anti-Kant*. Gotha: F. A. Perthes. 1905. Pp. vi + 196. 4 M.

Claparède, E. *Psychologie de l'enfant et pédagogie expérimentale*. Genève: H. Kündig. 1905. Pp. 75.

Crothers, S. M. *The Endless Life*. The Ingersoll Lecture for 1905. Boston and New York: Houghton, Mifflin & Co. 1905. Pp. 55. \$0.75

Duhem, P. *La théorie physique, son objet et sa structure*. Paris: Chevalier et Rivière. 1905. Pp. 450. 9.50 fr.

Ebbinghaus, H. *Grundzüge der Psychologie*. Erster Band. Zweite vielfach veränderte und umgearbeitete Auflage. Leipzig: Veit und Comp. 1905. Pp. xvi + 732. 17.20 M.

Painter, F. V. N. *Great Pedagogical Essays*. New York, Cincinnati and Chicago: American Book Co. 1905. Pp. 426. \$1.25.

Titchener, E. B. *Experimental Psychology: A Manual of Laboratory Practice*. Volume II, Quantitative Experiments. Part II, Instructor's Manual. New York: The Macmillan Co. 1905. Pp. 171 + 453. \$2.50.

Wentscher, Max. *Ethik*. II. Theil. Leipzig: Barth. 1905. Pp. xii + 396. 10.50 M.

NOTES AND NEWS

At the invitation of the Philosophical Department of Harvard University the American Psychological Association will hold its fourteenth annual meeting and the American Philosophical Association its fifth annual meeting, in Cambridge, December 27 to 29, on the occasion of the opening of Emerson Hall. The associations have sent out their preliminary announcements of the meeting. The formal opening of Emerson Hall will take place on the afternoon of Wednesday, December 27, when President Eliot and Dr. E. Emerson will deliver addresses. Immediately after, the two associations will meet in joint session to discuss the subject of the affiliation of psychology with philosophy and with the natural sciences. Professor Fullerton, President Hall, Professors Münsterberg, Taylor, Thilly and Witmer are expected to lead in the discussion. The president of the American Psychological Association will deliver his address on Wednesday evening, after which there will be a reception to the

two associations at the residence of Professor and Mrs. Münsterberg. On Thursday evening the president of the American Philosophical Association will deliver his address, to be followed by a joint smoker of the two societies at the Harvard Union. A luncheon will be served on Wednesday by the Harvard Corporation. Through the kindness of Harvard students of philosophy and psychology a limited number of dormitory rooms have been placed at the disposal of the Harvard Department for assignment to members of visiting associations. They will be assigned in order of application. A nominal fee of \$1 for the entire time will be charged to cover the expenses of attendance, etc. Application should be made as soon as possible to Professor E. B. Holt, 13 Chauncy Street, Cambridge, Mass. By the courtesy of the Bertram Hall Committee, twenty rooms in Bertram Hall, the Radcliffe College dormitory, will be placed at the disposal of women attending the meeting. The price of room with board will be \$1.50 per day. Application should be made to Miss Hoppin, Bertram Hall, Shepard Street, Cambridge, Mass.

WE take the following item from the *Popular Science Monthly*: "The inaugural meeting of the British Science Guild was held on October 30, at the Mansion House, London. The objects of the guild are (1) to bring together as members of the guild all those throughout the empire interested in science and scientific method, in order, by joint action, to convince the people, by means of publications and meetings, of the necessity of applying the methods of science to all branches of human endeavor, and thus to further the progress and increase the welfare of the empire; (2) to bring before the government the scientific aspects of all matters affecting the national welfare; (3) to promote and extend the application of scientific principles to industrial and general purposes; (4) to promote scientific education by encouraging the support of universities and other institutions where the bounds of science are extended, or where new applications of science are devised."

THE Section of Anthropology and Psychology of the New York Academy of Sciences met on November 27, 1905, at the American Museum of Natural History. The following was the program for the afternoon and evening sessions: W. S. Monroe, 'Smell Discrimination of Students'; F. Lyman Wells, 'Linguistic Standards'; F. M. Hamilton, 'A Study of the Reading Pause'; R. S. Woodworth, 'Vision and Localization During Rapid Eye Movements'; J. McK. Cattell, 'Measurement of Scientific Merit'; Brother Chrysostom, 'Temperament as Affecting Philosophic Thought'; W. P. Montague, 'Are Mental Processes in Space?'; C. M. Bakewell, 'Concerning Empiricism.'

THE Bolyai prize, founded by the Hungarian Academy of Sciences in memory of John Bolyai, the distinguished Hungarian mathematician, and his father, Farkas Bolyai, has been awarded to M. Poincaré. The prize consists of a commemorative medal and the sum of ten thousand crowns. It is awarded now for the first time, and will be awarded every five years to the author of the best work in mathematics published during the five preceding years.

THE JOURNAL OF PHILOSOPHY

PSYCHOLOGY AND SCIENTIFIC METHODS

THE RELATION OF PSYCHOLOGY TO THE PHILOSOPHY OF RELIGION

PSYCHOLOGY is now a science. The significance of this fact for the philosophy of religion is an exceedingly important one. As yet, however, the problem has received small attention. To most minds hitherto the investigation of the relation of science to religion has meant only the relation of the physical sciences to religion. Nor is this to be wondered at. The older psychology was largely speculative and metaphysical in character. There were, to be sure, those who employed an empirical method in psychology, but they were so far from comprehending the full scope of mental phenomena that at best their work was the promise of a science, rather than a science itself. They succeeded in treating psychology scientifically only by ignoring those phenomena of the mind that remained obdurate to their tentative empirical forms of procedure. It is not the fact that the new psychology takes account of the physiological conditions of mental phenomena, it is not the fact that the subject is now pursued in laboratories with instruments of precision that give it full standing as a science. It is much more the fact that the psychology of today has found a place in the natural system of things for those strange and relatively unusual phenomena of consciousness which but a short time ago seemed to the scientifically minded totally unreal, and to the superstitious manifestations of the supernatural. The theory of a subliminal self brings under the mantle of science much which before seemed impossible. Says Professor James in his 'Varieties of Religious Experience' (p. 253): "I can not but think that the most important step forward that has occurred in psychology since I have been a student of that science, is the discovery, first made in 1886, that, in certain subjects at least, there is not only the consciousness of the ordinary field, with its usual centre and margin, but an addition thereto in the shape of a set of memories, thoughts and feelings which are extra-marginal, and outside of the primary consciousness altogether, but yet must be classed as conscious facts

of some sort, able to reveal their presence by unmistakable signs." In showing that the abnormal can be explained in terms of the normal, psychology does now for the phenomena of mind what the physical sciences have long done for the phenomena of nature.

First let us note the central difference between the scientific view of nature and the attitude of traditional religion. According to physical science, nature is a network of objects and events. Of the ontological basis of this network of things science claims no knowledge. For her they are simply appearances—phenomena. This network of phenomena forms a complete system—every object in space, every event in time, mutually related to every other object and event—a seamless tissue without rent. Whatever changes occur, take place in accordance with uniform and necessary laws. The scheme of nature as viewed by science contains no gaps and no surpluses. There are no phenomena which are not called for by the causal law and all phenomena are present which the law demands. Let philosophy and theology hold what they will as to the existence of a transcendent realm, science admits no interpolations from that realm among physical phenomena. However real the supernatural may be, however important ethically and spiritually may be our attitude toward the supernatural, it no longer interferes with the laws of nature. Whatever may be the source or the significance of nature, for the scientist there is nothing in nature but the natural; or, to put the matter in popular language, miracles do not occur.

Now further it may be noted that theology itself, at least in its more progressive schools, has accepted this doctrine of science. Progressive religionists no longer tremble at new discoveries or new theories in natural science. Having accepted the basal postulate of physical science, they are indifferent as to any specific conclusions. Religion is no longer thought to be imperiled by the advance of the sciences of nature.

Let us turn now to the mental sciences. In this realm, too, the scientific spirit requires the same absolute phenomenalism as in the physical. Science finds in our inner experience, as in our outer experience, only phenomena. Subjective phenomena are strictly empirical. There is no more immediate apprehension of the transcendent in the one than in the other. Psychology as a science postulates the reign of natural law in the subjective sphere just as rigorously as physics postulates the reign of law in the objective sphere. If this be true, then the subjective miracle is quite as impossible as the objective miracle. Phenomena that appear to us strange or abnormal are only the less common or less obvious effects of the same natural laws as our ordinary experiences. Insanity is no more to be ascribed to a demon than is the lightning to the anger

of Jove. Illusions, hallucinations, hypnotic states, somnambulism, automatism, trances, etc., are all brought into line with the ordinary workings of the mind. Psychology reduces the abnormal to the normal as fully in principle, if not yet as completely in detail, as does physics. Just as physics makes use of such hypotheses as potential energy and the invisible ether, so psychology may adopt the hypothesis of a subconscious mind. But in one case as in the other the imperceptible factor is phenomenal, not noumenal; an object of possible experience and not a transcendent entity; natural, not supernatural.

Professor James in the work above cited shows a curious departure from the pathways of science in the suggestion that the subliminal consciousness may be a doorway into the spiritual world; that the emotions of conversion, religious visions, the ineffable experiences of the mystics, while explicable on their hither side in the light of a scientific psychology as effects of the subconscious mind, are yet on their further side true manifestations of the Divine, genuine grounds of belief, at least to those who have them, of the existence of the spirit-world. I am not concerned here with the truth or falsity of this view of Professor James, but I wish simply to point out that, true or false, it is a departure in principle from the ways of science. It finds interpolations of the supernatural among the natural, it violates the principle that nothing ever appears in nature but the natural. This view of Professor James is highly interesting, however, as a statement in explicit form of the attitude of many religious-minded persons of recent times. They have yielded to the demand of science to give up the supernatural in the physical realm, while still holding to the supernatural in the mental realm, putting their faith in what they call 'religious experiences.'

But not only does the general conception of psychology as a science lead to the view that all mental phenomena, religious phenomena included, are natural, but also the more specific study of religious phenomena themselves leads to the same conclusion. One of the most promising fields of scientific investigation which the new psychology has opened up is that of the psychology of religion. As a scientific study of religious experience the psychology of religion is a new study. It is not too much to say, however, that it has established already certain very important results. It has shown that the religious consciousness is not due to any special power or faculty of the mind. We do not need to assume any unique faculty of faith or spiritual discernment in order to understand religious phenomena. The form of mental action involved in the sudden spiritual change called conversion is exactly the same as seen in other and non-religious affairs of life. The experience of the sin-burdened soul that

finally surrenders its will and then of a sudden feels the joy of Divine forgiveness is psychologically the same as the experience we often have in trying to recall a forgotten name. We try and try, but the name does not come. We give up the search and by and by, as we go about other things, the sought-for name suddenly occurs to us as if it were the most familiar thing in the world. Or, again, we are practising some new art, say bicycle-riding, typewriting, learning a new piece on the piano. We try, try again, but each effort seems but a more dismal failure. We give the thing up in disgust at night, but in the morning we try it again and it is all easy. We wonder how we could have made such hard work and had so many failures in doing a thing so simple. Intellectual problems, too, are often labored with for days or even weeks and then solved all at once in what seems a sudden flash of insight. In form, conversion is an experience of precisely the same type. It can be explained by the same psychophysical processes as Starbuck has so well shown. Conversion, too, occurs in spheres other than religious. The awakening to a life interest in one's vocation is sometimes of this sort. James gives an instance of sudden conversion to avarice as striking and far-reaching in its results as any conversion to righteousness or faith. Loyalty to God and loyalty to king or country, religious devotion and patriotic devotion, are not unlike psychologically. The visions of the religious mystic are but examples of the mind's proneness to hallucinations which are often in no wise connected with religion. Furthermore, the type-forms of religious experience are not peculiar to any one religion. The names differ, the associations with forms of worship and with the varying standards of morality differ; the psychic states of adoration, fear, reverence, devotion, fanaticism, mystic ecstasy, etc., are universal. As James points out and illustrates by numerous instances, the mystic consciousness is cultivated methodically by Hindus, Buddhists and Mohammedans as well as by Christians. Savages, too, have their religious trances. These facts all go to show that the mind in its religious activities is the same mind acting under the same psychophysical laws as in the ordinary activities of every-day life.

Of course there is no implication here that all religions are equally good or that the teachings of all are equally true. We are not now considering the worth and validity of religion, but simply the mental phenomena of religion. As the chemist explains the nature of fire without discussing its uses and value, so the psychologist explains the nature of religion irrespective of its momentous import for human life. Fire is an element in physical nature, religion is an element in human nature. As the physical scientist explains one, so the mental scientist explains the other. As the physicist finds noth-

ing supernatural, but only a manifestation of natural force in the lightning's flash, so the psychologist finds nothing supernatural, but only a manifestation of the natural power of mind in the experiences of religion.

Possibly the psychologist is wrong. The view of James or some other theory of mysticism may be true, or may be a deeper truth, but the point I wish to make is simply that modern scientific psychology holds that all the things that appear in consciousness are phenomena, conformable to the natural laws of the mental life, and that none of these things are objects of the transcendent realm. If philosophy or theology finds reason to refer them to a transcendent ground, psychology has nothing to say. But in themselves as facts of consciousness psychology maintains that religious phenomena, like all mental occurrences, are natural phenomena. Science is a jealous mistress. Him who would go with her one mile she oft compels to go twain. If we accept physics, then why not psychology?

Undoubtedly to many minds this would seem to be giving up all knowledge of the transcendent world—all rational ground for belief in the objects of religious faith. The problem thus raised for the philosophy of religion is indeed a most serious one. It does not admit of any thoroughgoing discussion in this brief paper, but I should like to point out the direction in which, as it seems to me, the solution lies.

The acceptance of the scientific view in the mental as well as in the physical sphere does indeed compel us to give up all hope of a perceptual knowledge of the Divine. That God is not revealed in the heavens by telescopes of even the highest power does not disturb us, nor need we any more be disturbed that he is not revealed in the mind by experiences of religious fervor, celestial visions and mystic ecstasies. We may fully accept the truth of these experiences as mental phenomena, although we deny the ontological significance that traditional religion has attached to them. The difference between the old psychology and the new is to be noted at this point. The old either denied such experiences altogether or accepted them as supernatural; the new accepts them subjectively, but, explaining them by the known laws of the mind, denies their objective significance. There are strata of the mental life that occasionally break through the crust of our ordinary consciousness. Whether these subliminal activities be more physical or more psychical in their nature, we need not now ask. Psychology shows them to be a fact, and a fact of the phenomena of human life. We can see, then, how certain religious experiences, arising out of these hidden depths of our nature, have seemed to be of supernatural origin. A scientific psy-

chology shows them to be quite natural, however uncommon and inexplicable to their possessors.

But if the absolute phenomenalism of experience demanded by science compels us to give up perceptual knowledge of the transcendent, we are not therefore compelled to give up a rational knowledge of the same. In the moral sphere one can be conscientious without hypostasizing conscience as a unique faculty of the soul, or personifying it as the voice of God. The sentiment of patriotism may exist, not only as an ardent emotion, but as a dynamic spring of action, although one knows his country only as manifested in the concrete experiences of his own every-day life and in the matter-of-fact records of history. It is not necessary to possess any mystic vision of one's country as a real person or as an entity of perception in order to love it and devote one's self to it. So without denying the influence which visions of the Divine and mystic experiences of unity with God must have on those who feel them, we can understand the possibility of reverence and love of God though one never finds that God enters into his experience as an object of perception. That certain minds do include apparent perceptions of the Divine among the phenomena of their inner experience is a fact of no ontological value, since psychology can fully explain these experiences by subjective principles without any need of supposing any corresponding objective entity. But, on the other hand, the refusal to accept this mystical evidence for the Divine is no argument at all against the rational ground for a belief in God based on normal human experience, subjective and objective. What science takes away by her hand, she more than makes up by her presence. It is not in the unusual and the abnormal that the reflective mind is to see God. It is not through gaps in nature that we are to get glimpses of the supernatural. But rather in the very nature of nature as rational, harmonious, law-conforming, subject to scientific interpretation, we have the best evidence that the world is the work of an intelligent mind, that it is made mindwise, that there is a rational spirit at the core of the universe.

For science the transcendent does not enter into the perceptual realm, external or internal. It is indeed hard for the religious mind to admit this fact in all its fullness. Until it does, however, religion must always more or less stand in fear of science. Once give up the perceptual bag and baggage to science, and we find that we have but lost a weak support for religion in order to gain a stronger. Every advance in science means an extension of the proof that experience is rational. The rationality of experience is the best evidence that the world of experience is the manifestation of rational intelligence. Ultimately, I believe, we shall find that the full acceptance of science

in the mental domain as well as in the physical will strengthen the rational grounds of theistic belief.

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DISCUSSION

THE KNOWLEDGE EXPERIENCE AGAIN

I OWE an apology to the editor and to the readers of this JOURNAL for returning a third time to the defense of my article on 'Immediate Empiricism,'¹ but Dr. Bode's recent article² is so clear and compact that I can not refrain from again taking a hand.

Dr. Bode points out that since I recognize that an experience (which is not itself a knowledge experience) may be cognitive, *i. e.*, have bearings which lead out into a distinctively knowledge experience, I can not readily be charged with making such a gap between the (dominantly) non-knowledge experience and the knowledge experience as deprives the latter of all point when it comes. But he claims (1) that this later experience which identifies the thing of the first as being thus and so (a fearsome noise as a wind-curtain fact) is essentially a 'pointing' experience, a 'knowledge about,' and hence does not give the full meaning or truth of the first, which can be found only (2) in an experience which is wholly of the 'acquaintance with' type, having neither the 'leadings' of the first nor the 'pointings' of the second. And this he claims must be (3) an 'unconscious experience,' a term which can have no other meaning assigned to it than the implication or presupposition of an object out of experience, conscious experience being then confined (on this basis) to relations between final out-of-consciousness terms. This position is (4) acutely identified with Woodbridge's definition of consciousness as a continuum, with its realistic implications.

I agree wholly with the first two points (save that empirically the 'complete acquaintance' thing need not necessarily be an entire experience, but may be an element in a more complex experience, and this, *as a whole*, may have cognitive leadings). But if this third point is correct, empiricism, in presupposing things which can not be experienced, has hanged itself on the topmost bough of the tree whose seed and fruit it meant and pretended to be. I marvel that Dr. Bode, in seeing so clearly the first two implications, did not follow the empirical clue; and, instead of arguing conceptually that the

¹ Vol. II., No. 15, p. 393.

² Vol. II., No. 24, p. 658.

terminal experience *must* refer to something unexperienced, did not look about for some experience which should meet the conditions of complete cognitive fulfillment in a thing which itself is neither a 'leading on' nor a 'pointing back.' Take again the case of the fearsome noise which develops into a wind-curtain fact. What is its appropriate career? Surely not into an 'unconscious experience,' but into an experience which in so far forth is practical (or moral) and esthetic. The complete acquaintance which is self-adequate is, one might say, a relationship of friendship or affection (or of contempt and disregard) and of assurance or control. The complete 'acquaintance' determines the attitude of, say, management of the thing as a means to an end; or of, say, amused recollection—not remembrance as logical pointing; *i. e.*, you are what once fooled me (an *S-P* experience, or judgment), but remembrance as recreation, or revival, in their literal immediate senses.

I am enough of a Hegelian to believe that 'perfect' knowledge is not knowledge (in its intellectual or logical connotation) at all, but such a thing as religionists and practical people have in mind; an attitude of possession and of satisfaction,—the peace that *passes* understanding. It means control of self, because control of the object on which the status of the self contemporaneously depends. Here, if anywhere, the pragmatic is justified, like wisdom, of its children; and if we have something more than the pragmatic, it is because this attitude of attained adjustment is so saturated with emotional, or morally and esthetically conscious, content. If one will realize how largely discursive knowledge empirically fulfills itself in a coloring or toning—an immediate value element—in subsequent experiences,³ one will, I think, be fully guarded against supposing that 'unconscious experience' is the sole alternative to intellectualized experience. 'Unconscious' the experience is with respect to logical determinations; but immediate experience is saturated with values that are not logical determinations. The epistemological idealist can not deny this as a fact, because it is precisely this fact which makes him discredit immediate experience, and insist, therefore, upon its absorption into an 'absolute' which is just and wholly logical.

Such a position also differentiates itself from the realism which Bode criticizes. If consciousness were just cognitional awareness, Woodbridge would seem to have said the last word in calling it a 'continuum of objects'—of objects which are, as objects, out of consciousness. For as cognitional or intellectual, it is surely the business, so to say, of consciousness to be determined (that is, deter-

³ There is much in Dr. Gordon's articles on 'Feeling' (this JOURNAL, Vol. II., Nos. 23 and 24) which I should gladly adopt as exegetical of my position.

minate) solely in and through objects. Otherwise common sense is crazy and science an organized insanity. But the 'things' of which knowledge constitutes a continuum may be precisely immediate values which are not constituted by logical considerations, but by attitudes, adjustments, coordinations of personal activities. Knowledge, in the strict or logical sense, mediates these activities (which include, of course, passivities), establishing certain 'leadings' and 'pointings,' certain equivalences, and thereby certain intermediaries and transitional points of immediate valences or worths; and, when it has completely wrought out a certain equivalence, finds its own surcease in a new value, expressive of a new esthetic-moral attitude. From this point of view, knowledge is not, but develops, a continuum; an emotional content being, as substrate, the continuum of which knowledge 'pointings,' or discriminated-identities, are the discretetes.⁴

Have we not the elements of a reconciliation of what is significant in realism and in idealism? We have something which is beyond consciousness as *cognitional* and which determines consciousness as cognitional—*literally* determines it in the sense that the practical-esthetic attitude, in order to maintain itself, evokes the reflective attitude; and *logically* determines it, in that the content of knowledge must conform to conditions which the knowledge consciousness does not itself supply.⁵ But this 'efficient' and 'formal' cause presents a situation in which a conscious agent or person is indispensably present. It is not a non-empirical thing-in-itself (against which idealism has stood as a protest); and it is something in which a conscious being plays a part. Is epistemological idealism anything but a transfer into the knowledge situation of a relation which actually holds in the practical-esthetic situation—a mistranslation which always calls out 'realism' as a counterbalance; which tends, in the end, to destroy the peculiar individuality that is the essence of such situations (resolving individuality into terms of the universal, objective content which is alone appropriate to knowledge); and which hopelessly complicates the treatment of the knowledge situation itself by deliberately throwing away the key to its interpretation?

I wish to take this occasion to say a few words also about Professor Bakewell's interesting contribution to this discussion.⁶ My original contribution was intended, as Bakewell sees, to bring into sharper relief what seemed to be the fundamental point at issue, so that the

⁴ See, again, Dr. Gordon's articles, and also her thesis, 'The Psychology of Meaning,' pp. 22-26.

⁵ See 'Studies in Logical Theory,' p. 85, and, for a statement in psychological language, pp. 253-256.

⁶ This JOURNAL, Vol. II., No. 25, p. 687. The preceding paragraphs stand as written prior to the appearance of Professor Bakewell's article.

artillery of the opponents of recent empiricism (for whose range and shot I profess the greatest respect) might fire there, rather than at bogey-men or side-issues. I must confess I did not succeed in so presenting it to Professor Bakewell. He says the idealist denies that 'any single actual experience, as existent or as known, is immediate, and simply immediate' (p. 690). By turning to p. 394 of my original article, it will be seen that I there declare the nub of *immediate* empiricism to be precisely the thoroughgoing fallacy of the absolute identification, for metaphysics, of experience '*as known*' with experience '*as existent*.' This is the point at issue; hence objections which rest upon the fact that all *knowledge* involves a mediate element, are just non-relevant. That the distinction between the *immediate content* and the *mediate content* (together with their reference to one another) is necessary in and to the knowledge experience *as such*, I not only fully accept, but have been at considerable pains to expound and to attempt to explain (in 'Studies in Logical Theory').

So when 'the idealist' (p. 688 of Bakewell's article) says that 'experience is always a complex of the immediately perceived and the mediately conceived' he is saying something which the empiricist accepts so far as the content of a *distinctively* knowledge, or logical, experience is concerned, while he (1) takes fundamental issue with the implication that experience is 'always' distinctively logical, and also (2) points out that even the distinctively logical experience is still 'always' *in toto* an immediate experience; or, more specifically, that the distinction between 'immediate perception' and its material ('data') and 'mediate conception' and its methods ('thinking') is always within and for the sake of a value in experience which is 'pragmatic' (personally, I should add esthetic), not reducible to cognitional terms. Since it is only *as elements in the content* of an immediate experience that the distinction between the immediately perceived (the sensibly given) and the mediately conceived (the relationally thought) occurs, it is obvious that immediate empiricism does not identify the immediacy for which it stands with one of the *terms* of its own content at a special juncture.⁷

When Professor Bakewell says that 'immediacy in this enlarged and general sense, as noting that aspect of direct ownership, of personal appropriation, which is always found in concepts and principles of mediation . . . is a fact fully taken into consideration by idealism,' he is saying something which doubtless *his* idealism takes due account of, but which many of us believe epistemological idealism is wholly impotent to take account of. It gladly assumes the benefit

⁷ I repeat what I have said before: it is the essential vice of *sensationalistic* empiricism to make this identification between a *functionally determined instrument and test of knowledge* and experience as such.

of such facts, but only by introducing elements which are not, and can not be reduced to, cognitional terms and relations; which connote emotional and volitional values; and to which 'humanism,' 'pragmatism,' 'radical empiricism,' are desirous of assigning their metaphysical weight. If Professor Bakewell's idealism takes *such* facts into consideration, then, I believe, he is, for all intents and purposes, an immediate empiricist, though seemingly one not yet entirely free from epistemological bondage.

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UNIVERSALS: A REPLY

IN a recent number of this JOURNAL¹ Dr. Pitkin has made some criticisms upon a paper entitled 'The Metaphysical Status of Universals,'² in which I suggested that a universal might be fully described in concrete terms and completely contained in experience. I find it rather difficult to reply to Dr. Pitkin's criticisms, both because they are so numerous and because I am not sure I understand what he says. The best I can do is to single out what seem to me the most important of them and state where I think he is mistaken.

If I understand him correctly, Dr. Pitkin says that what I regard as a universal (a thing, image or response which suggests an indefinite number of possible cases similar to itself) is not a universal. The situation described by the above parenthesis, he says, is 'not one in which the universal is given in its normal sense at all' (p. 601). And he goes on to say that in entertaining a universal 'I never refer positively to other concrete instances' (p. 601). The source of the trouble, he seems to think, is that I am not, as I pretended to be, empirical, but am preoccupied with the *definition* of the universal, which exists only in lexicographers' heads.

Now I might object to Dr. Pitkin's statements about definition, for implying that a definition describes, not facts, but some ideal goal which facts never quite realize. But while I do think that this theory of definition is the source of serious errors in logic, my main concern is to show that the situation I described occurs very often in common life. We are all, now and then, aware of some particular content, whether it be a directly present physical object, an image, a response or a spoken word, which we consciously use to stand for a whole class of similar objects or images, etc. And men do this long before they have learned the definition of a universal—which, indeed,

¹ Vol. II., No. 22.

² *Philosophical Review*, January, 1905.

most men never learn at all. The child in our grammar-schools is taught what common nouns are, and actually thinks of them as applying to a class. The adult thinks of business men, drummers, students, sailors, professors, as a class, and in so doing his state of mind is assuredly a particular content with a consciousness that he is referring to many possible similar cases. One says, 'The newspaper murders good grammar,' and though he entertains the idea of some particular newspaper, he is perfectly and clearly conscious, at the moment, of referring to other newspapers too. These are certainly facts and frequent enough in daily life; and these are the facts to which logicians and psychologists refer and to which I was referring and which the common consent of men has agreed to denote by the word 'universal.' These are the facts which have occasioned the problem: how can one content have so manifold and vague an application and yet be one and concrete? And my question was, can these facts be described without any substantive or disembodied entity being implied behind them? Now if Dr. Pitkin says these facts have nothing to do with the 'normal' universal, he is simply using the word 'universal' in a new sense. He is talking of some other set of facts which he ought to call by an entirely different name.

Of course, I may quite misunderstand Dr. Pitkin, but it seems to me he has in mind rather what Hobhouse calls 'indeterminate' terms, which, not being consciously meant to apply to an indefinite class, are neither universal nor particular. It is perfectly true that in most of our observations the facts we observe, and in most of our judgments the words and ideas we employ, though capable of being used as universals, are not at the time so used. As commonly understood in spoken or written judgments, words suggest to us simply their meanings, and these meanings are not usually entertained as universal meanings. They are then what Hobhouse calls 'indeterminate.' But it is not of such facts I am talking, but only of cases where we *use* the words or ideas or things *as* universals. And there are in the experience of everybody who means to make general statements—as most of us often do—plenty of such cases. So much in answer to the charge of being too preoccupied with the definition to consider the empirical facts.

As to my account being 'ultra-psychological' (p. 600), that is a misapprehension which need not have occurred. I expressly spoke of things (*i. e.*, objects in space) as universals. 'The particular red apple I see or have an image of suggests . . .'³ My view is meant to include realism in the medieval sense, except that it defines uni-

³ *Philosophical Review*, January, 1905, p. 198.

versals relationally rather than substantively. But it insists upon the objectivity of universals as much as the old realism did.

As to the fertility of the account in question, I should like to say a few words. I think its promise lies in two directions: the one practical, the other theoretical. First, it dispels the notion of an entity forever beyond our grasp, and thus aids our belief that there is nothing we can not adequately know face to face in concrete experience. It helps also to give us a faith in the intellect which those who fix a gulf between thought and reality would destroy, and which is one of the greatest spurs to philosophic progress. Second, it is from a theoretical point of view at least stimulating, since it enables us to reduce the category of universality, which has generally been treated as irreducible, to lower terms. It defines the universal as a certain function of a term combined with the relations of possibility and similarity—at the same time differentiating it from association by similarity in that it contains the one-term relation of possibility. In particular I think it should throw new light on the theory of judgment, which has been so long dominated by a belief in the two ultimately irreducible categories of individual (real) and universal (concept, qualifying idea or hypothetical reaction).

In conclusion, may I express my desire to hear more of Dr. Pitkin's definition of the universal? I can not help thinking that it is not so very different from my own, inasmuch as I agree that individual objects in space are not *merely* individual, but universal as well. For they have habits (laws) and tend (by inertia) to repeat themselves indefinitely in time, *i. e.*, to call up in the physical world, even as universal ideas in the mind tend to call up in the mind, an indefinite series of similar cases which may or may not actually appear, according as circumstances permit or forbid.

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REVIEWS AND ABSTRACTS OF LITERATURE

Der doppelte Standpunkt in der Psychologie. MARY WHITON CALKINS.
Leipzig, Verlag von Veit u. Co. Pp. 80.

Professor Calkins has in this monograph given a somewhat more detailed exposition of the doctrine, set forth in her 'Introduction to Psychology,' that experience may and should be psychologically investigated from two points of view: first, by regarding each of its processes 'without reference to any self, as an idea, a fact of consciousness occurring in a series of ideas'; and second, by considering 'each experience as relation of a self to other selves,' and distinguishing it 'from different forms

of consciousness by the nature of this relation.'¹ In the work now before us, after a brief introduction, she first give a clear and succinct statement of the principles and results which in her opinion should obtain in psychology regarded from the first point of view. This covers her definition and classification of conscious elements. In the second part of the monograph she contrasts, more fully than in the introduction, the two psychologies: process psychology and ego, or self, psychology. The former, treating consciousness as a series of connected processes without any regard to the self, has for its problem the analysis, classification and explanation of these processes. The latter regards every process as belonging to a self and as referring or not referring to other selves. The former gives a causal explanation of mental phenomena; the latter does not, since selves are not originally objects in time, hence not under the causal law. Finally, in the third part of her discussion, the author considers a number of conscious phenomena from each of these two points of view: a perception is compared with perceiving, an image with imagination, a thought with thinking, the recognized with recognition. This is followed by a statement of the classification of emotions from the point of view of the self psychology, and a discussion of the twofold interpretation of will and belief, reproduced in large measure from the 'Introduction to Psychology.'

Professor Calkins's clear and forceful way of putting things challenges one into equally definite attitudes, whether of agreement or disagreement, on the subjects she discusses. Her lucidity would seem to offer little excuse for misunderstanding on the reader's part, yet the present reviewer finds certain aspects of the central thought expressed in this monograph not wholly free from obscurity.

We may waive the objection that 'self psychology,' admitting of no use of the causal principle, has for that reason no right to be called a science. Classification and description, as well as explanation, are functions of science, and if self psychology enables us to supplement process psychology where the latter's descriptions and classifications are defective, then it may be welcomed as a legitimate addition to psychological method. But it must not merely make description and classification easier; it must really describe and classify material with which process psychology can not deal. Simplifying description is not necessarily a scientific advance; it may be simpler to classify flowers according to color than in any other way, but such a classification is scientifically less desirable than a far more complicated and difficult one which involves a more thoroughgoing analysis. In like manner, although a concise, lucid classification of the emotions may be made by considering the relations to selves which they involve, such a facilitation is not enough in itself to warrant the scientific value of the principle upon which it is based. Only if on no other principle could full justice be done to the facts, should we be led to admit the scientific necessity of the self psychology.

Now the division of emotions into personal and impersonal, and the cross-division into egoistic and altruistic, afford a very satisfactory ar-

¹ 'Introduction to Psychology,' 2d Ed., p. 149.

rangement of them. But can not this same division be preserved while at the same time 'self-regarding' and 'other-regarding' are looked upon not as 'attitudes of the Ego,' but as components of processes, components susceptible of analysis? For instance, let us take the emotion of sympathetic joy. I can describe this as the attitude in which I recognize and rejoice in the existence of joy in another self. I can also describe it perfectly well in terms of process psychology. The emotion of joy in general may be structurally analyzed into the sensational elements of the idea or ideas occasioning the emotion, the sensational elements resulting from the bodily changes involved, and the resultant affective tone derived from all these sensational components. When the emotion is one of sympathetic joy, the only modification that our structural analysis needs is this: the occasioning idea is, in such a case, an idea of the emotion, that is, a weakened reproduction of the emotion, associated with certain ideas which mean to us the personality of another—ideas of his appearance and movements or words, perhaps. When I think of my friend's joy I think of how he will look, what he will do and say, etc. My idea of his personality may be analyzed structurally into sensational and affective elements quite as well as my consciousness of the bodily effects of my emotion. There is no reason, in short, why process psychology can not, as well as self psychology, be the basis of a classification of emotions into those which do and those which do not involve social consciousness, for social consciousness is a process capable of structural analysis. Because self psychology has a short-hand way of describing certain mental phenomena as attitudes of selves, it is not, therefore, a necessary adjunct to process psychology. In certain cases, as a matter of fact, Professor Calkins's description of phenomena from the point of view of self psychology seems more elaborate and far-fetched than her account of the same phenomena in their process aspect. Her analysis of a perception as a process, for instance, reveals it as composed of sensational elements plus the relational consciousness of unity and 'the attentional element, clearness.' When regarded from the point of view of self psychology, perception involves something more; namely, an awareness 'that I am sharing the consciousness of other perceiving agents.' This added mark of perception, as distinguished from imagination, being supposably describable only from the standpoint of self psychology, is taken as another evidence of the way in which the latter supplies the defects of process psychology. Now surely a perception never under ordinary circumstances involves a consciousness that other people share or may share one's experience. When I sit alone in my study and look at my bookcase, I have not the slightest reference to other minds in my mental attitude. Subsequent reflection assures me that other people would share the bookcase experience if they were here, but I do not distinguish the perceived bookcase from an imagined bookcase by consciously referring to other minds at all. Professor Calkins, in a later passage, says that the question may indeed be raised, 'Ist das oben beschriebene Bewusstsein der Mitwahrnehmer ein unentbehrlicher Bestandteil jedes Wahrnehmens, oder entdeckt man erst durch spätere

Ueberlegung dieses Kennzeichen desselben?"² She answers: 'Ich persönlich glaube in allen Fällen wo ich wahrnehme, ein, obgleich dumpfes, unklares und vages Bewusstsein irgend welcher Mitwahrnehmender zu besitzen.' Here is a case, then, where introspections differ, for the present reviewer discovers no such consciousness of other selves present in the moment of perception, and so far from thinking that 'Um die Einbildungskraft oder Phantasie psychologisch von dem Wahrnehmen zu unterscheiden, muss man . . . zur Ichpsychologie seine Zuflucht nehmen' finds the elementary 'feeling of realness' which Miss Calkins *quâ* process psychologist assigns to perceptions as distinguished from imagined ideas, a much truer description of their differentiating mark. That perceptions are shared by other selves, while fancies are not, is a good distinction from the point of view of epistemology, but not from that of conscious content.

Another difficulty which I find in Miss Calkins's 'doppelte Standpunkt' is that her dividing line does not cut deep enough. On page 38 she says emphatically that from both points of view consciousness may be analyzed into elements. Are, then, the elements found by analysis of a conscious phenomenon from the point of view of self psychology different from those which its analysis as a process reveals? No, they are not; at least all the elements which may enter into a process may also form parts of the same phenomenon as an attitude of self. "Jedes psychische Element ist als der Bestandteil entweder eines psychischen Vorgangs oder des oben beschriebenen Selbstbewusstseins anzusehen." If a phenomenon regarded as process and the same phenomenon regarded as self-attitude are both considered structurally, and held to contain the same elements, the difference between them can lie only in one or the other of two conditions. Either the elements are differently combined in the two cases, or the phenomenon, regarded from one point of view, must reveal some added elements over and above those which it displays when looked at from the other point of view. Neither of these alternatives is definitely maintained by Professor Calkins, and it seems to the present reviewer as if she should either have abandoned structural analysis in her self psychology or established the distinction between her two standpoints in wholly structural terms.

Process psychology, as Miss Calkins calls it, undoubtedly needs improvement and completion at many points. The most hopeful effort to improve it now being carried on is, it seems to me, the present tendency toward a recognition of efferent factors. If this tendency displays itself in a study of mental phenomena as attitudes of the psychophysical organism, a real need may be met; a study of them as attitudes of the self seems to me far less valuable from the point of view of pure psychology.

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² P. 44.

Ueber die Helligkeit einmaliger und periodisch wiederkehrender Lichtreize. HENRY J. WATT. *Ibid.*, S. 591.

Using the above described apparatus, the author has compared the brightness of a Talbot field with the brightness of a stimulus of the same area, intensity and duration as a single one of the stimuli whose succession produced the Talbot field. Five such fields were used, in which the durations of the stimuli were related as 20:40:60:80:100, and the rate of succession was adjusted until all trace of flicker had disappeared. The author notes that all obvious flicker may have disappeared while the luminous field still appears slightly agitated. The subjects were cautioned to make the disappearance of the last trace of movement or flutter from the field their criterion, when the critical period was being measured. The critical period varied widely in the five subjects, as, for instance, from 6 to 9 σ in one of the Talbot fields and in another from 40 to 63 σ , but the subject having the least critical period for one of the fields had also the least for the other four that were used: and so for the subject that had the greatest critical period; and so on.

The author confirms previous experiments of Marbe, that decrease in the difference between the illuminated and the non-illuminated phases, as likewise a decrease in the average intensity of light, shortens the critical period. The subjects show no uniformity as regards the relative intensities of the single stimulus and of the Talbot field produced by a succession of similar stimuli. Two subjects found the former to be darker, and one lighter, than the Talbot field; while one subject found the two equal in intensity. It might be expected that the subject whose critical period was least would be apt to find the single stimulus darker than the constant fields, since, as the apparatus was arranged, the duration of the luminous phase decreased along with the critical period. "As the rate of rotation of the disk is increased the duration of Hess's field [single stimulus] is reduced, while the intensity of Talbot's field naturally remains the same as soon as the critical period has been attained. Wherefore it would be eventually possible [by increasing the rate] to elicit the judgment 'darker' from all the subjects." Yet this explanation is not possible because the one subject who found the single stimulus brighter than the Talbot field was the one whose critical period was next to the shortest. The author rightly finds that this lack of simple relation between the brightnesses of the two fields is no occasion for surprise; for in view of the great individual differences as regards critical period, it is natural enough that the sensation curve yielded by a single stimulus should vary just as widely. This curve and the critical period depend on different combinations of physiological factors.

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Aufmerksamkeit und Zeitverschiebung in der Auffassung disparater Sinnesreize. WILHELM PETERS. *Zeitschrift für Psychologie und Physiologie der Sinnesorgane*, Bd. 39, Heft 6, pp. 401-428.

Peters repeats the experiment of Exner and Miss Hamlin upon the

influence of attention upon the difference in time of perception between ear and eye. A spark served as source of sound and an incandescent lamp with ground-glass globe as visual stimulus. A rotating disk with electrical contact and adjustable shutter permitted any desired relation between the times of the two stimulations.

It was found that the visual stimuli must be given from 36 σ –71 σ earlier than the sound if it should seem to precede, while it need be given but 20 σ –38 σ after to seem to succeed. The values given indicate the range for individuals, omitting results from one man who is deaf. When attention was given to sight it need be given but 39 σ –43 σ earlier to precede, and must be given 55 σ –91 σ later to seem to follow. When attention was given to sound, the visual stimulus must precede by 75 σ –107 σ to seem to come earlier, while it seems to come later if given 16 σ earlier in one individual and 85 σ later in another. Any change in intensity or in the conditions of the experiment was effective only as it affected attention.

The experiments are too few to be conclusive, but they are valuable, since they are performed under Exner's direction and bring the results of his investigations into harmony with the Leipzig complication experiments.

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Evolution and Ethical Method. H. W. WRIGHT. *International Journal of Ethics*, October, pp. 59–68.

Ethics needs a method which can do justice both to the hedonistic conception of morality as founded upon our desires and to the intuitionist view of it as characterized by necessity and authority. Morality is the conduct which satisfies our desires, but it is also that which imposes upon them a law. The idea of evolution as applied in idealistic theories of knowledge gives us the most adequate interpretation of the moral life which, like knowledge, is a process of organization and development. In every such organization we find a single, central activity working itself out in a variety of forms as determined by the necessity of its conditions. In the case of conduct this central activity is a purposeful or voluntary activity involving cognition, feeling and action. The forms into which this differentiates itself are the duties or virtues which are the necessary stages in the development of the voluntary life. They are necessary because 'without the interposition of these types of action primitive conduct could not have been organized. The virtues derive their authority from their place in moral development.' The principles of conduct are thus 'understood as depending upon the natural impulses of man, yet at the same time as possessing absolute authority over all individuals.' In the application of this method minute exactness is not to be expected, since necessity attaches only to the general activities relating to the universal conditions of human life. As illustrations of the method three types of action are given, (1) that activity in which the

individual attains a single object of desire, (2) that activity in which total individual welfare is pursued, (3) that activity in which the individual promotes the welfare of society.

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JOURNALS AND NEW BOOKS

THE PSYCHOLOGICAL REVIEW. Vol. XII., No. 6. *Studies from the Bryn Mawr College Laboratory: An Experiment on Learning to make Hand-Movements* (pp. 351-369): JAMES H. LEUBA and WINIFRED HYDE. - The tests involved the learning to write German script, both with and without reading-knowledge of the same, and were made at different intervals with different groups of persons, *i. e.*, twice a day, once a day, every other day and every third day. The results show in favor of once-a-day practice; they show also that visual acquaintance with German script is a very small part of what has to be acquired in order to be able to reproduce these forms with the hand. *A Study of the Motor Phenomena in Chorea* (pp. 370-385): DR. G. M. PARKER. - Choreic movements are regarded as reversions to type, are occasioned by an attempted functioning of the higher, more complex motor systems, and become more exaggerated with the increasing complexity of the movements attempted. Experiments upon choreic patients were made, showing the influence upon the respiratory curve of activities of varying degrees of complexity. *Studies from the Psychological Laboratory of Mount Holyoke College*, communicated by HELEN B. THOMPSON. *The Effect of Brightness of Background on the Extent of Color Fields and on the Color Tone in Peripheral Vision*: GRACE MAXWELL FERNALD. - Tests were made with a modified form of the compimeter and the permanence of a given color quality was measured by the length of time the sensation endured by continuous stimulation. Four backgrounds of gray paper, matching in brightness respectively the blue, red, green and yellow, were used. The result was that the brightness had a decided effect upon the color tone of all colors not spectrally pure; also affected the width of the color field.

THE PSYCHOLOGICAL BULLETIN. Vol. II., No. 11. *Interest and Attention* (pp. 361-368): FELIX ARNOLD. - The author criticizes those writers who identify interest with feeling, also those who regard interest as a form of attention. Interest distinguishes itself from feeling in that it refers to the future, while feeling has reference merely to the present. Attention is that state of consciousness in which there is 'the greatest clearness plus the motor adjustments,' and as interest is independent of feeling, so attention may or may not be attended by interest. *Psychological Literature* (pp. 369-388)—Mary Whiton Calkins, *Der doppelte Standpunkt in der Psychologie*: FELIX ARNOLD. George Stuart Fullerton, *A System of Metaphysics*: EVANDER BRADLEY MCGILVARY. John Wallace

Baird, *Color Sensitivity of the Peripheral Retina*: JOHN B. WATSON. Sigmund Exner, *Zur Kenntnis des zentralen Sehaktes*: HARVEY CARR. Dr. Bumpke, *Untersuchungen über den galvanischen Sichtreflex*: JOHN F. SHEPARD. *Discussion* (pp. 388-391)—*Visual Sensation and Eye Movement*: EDWIN B. HOLT.

JOURNAL DE PSYCHOLOGIE. September, 1905. *Étude psychologique et clinique sur l'échopraxie* (pp. 385-403): DR. DROMARD.—Echopraxie is a sort of impulsive or automatic imitation of gestures or movements made by another person. The imitation takes place immediately upon the objective representation, without any apparent intellectual or volitional operation interposing. There are numerous cases of echopraxie in normal individuals; and it is particularly apparent in the insane and idiotic, as well as in children of nervous temperament. *De la kleptomanie* (pp. 404-426): DR. ROGER DUPOUY.—Kleptomania is explained upon the basis (a) of impulsive obsession, (b) reflex action in response to a particular stimulus, (c) mere response to some morbid design. Concrete cases are given to verify the above classification. *Des rêves stéréotypes* (pp. 427-438): DR. P. MEUNIER.—Numerous illustrations of stereotypic dreams are given. In general they may be explained upon the ground of some slight pathological condition in the brain, which leads to a fixation of ideas in the sleeper.

Croce, Benedetto. *Lineamenti di una logica come scienza del concetto puro*. Naples. 1905.

Gomperz, Theodor. *Essays und Erinnerungen*. Stuttgart: Deutsche Verlagsanstalt. 1905. 7 M.

Jones, Henry. *The Philosophy of Martineau in Relation to the Idealism of the Present Day*. New York: The Macmillan Co. 1905. 8vo. Pp. 37. \$0.30.

Morgan, C. Lloyd. *The Interpretation of Nature*. New York: The Macmillan Co. 1905. 12mo. Pp. 164. \$0.65.

Picavet, Francesco. *Esquisse d'une histoire générale et comparée des philosophies médiévales*. Paris: Alcan. 1905. 8vo. Pp. xxxii + 367.

Wolf, A. *Existential Import of Categorical Predication*. Studies in Logic. London. 1905.

NOTES AND NEWS

THE second German congress for experimental psychology will be held next year in Würzburg from the 10th to the 13th of April. The following papers will be presented: F. Krüger, 'Ueber die Beziehungen zwischen experimentalen Phonetik und Psychologie'; O. Külpe, 'Ueber den gegenwärtigen Stand der experimentalen Aesthetik'; F. Schumann, 'Ueber die

Psychologie des Lesens'; R. Sommer, 'Ueber Psychiatrie und Individualpsychologie'; W. Weygandt, 'Ueber die psychologische Untersuchung des angeborenen Schwachsinnns.' During the following week there will be a course on medico-pedagogical psychology, arranged for physicians and teachers, and organized by Professor Sommer, of Giessen. The course will include visits to institutions for the care of abnormal children.

PROFESSOR WILHELM OSTWALD, of Leipzig, has been appointed Non-resident Lecturer in Psychology at Columbia University for the current year. He will give a series of lectures, beginning January 26, on 'The Relation of Energy to Life and Thought.'

THEODORE DE LEO DE LAGUNA, A.B. (California), Ph.D. (Cornell), has been made assistant professor of education in the University of Michigan, to fill the place left vacant by the resignation of Professor Alger.

THE first number of the *Biophysikalisches Centralblatt* has just been issued in Leipzig. The journal will be devoted to the study of biological physics, under which heading psychophysics will be included.

DR. WILHELM WUNDT, the eminent psychologist of the University of Leipzig, celebrated the fiftieth anniversary of his doctorate on November 10.

ERRATA

Page 298, the table in center of page should go with footnote 6.

Page 439, line 10 from bottom, for 'impaired,' read 'unpaired.'

Page 504, line 13 from bottom, for '1900-04,' read '1890-4.'

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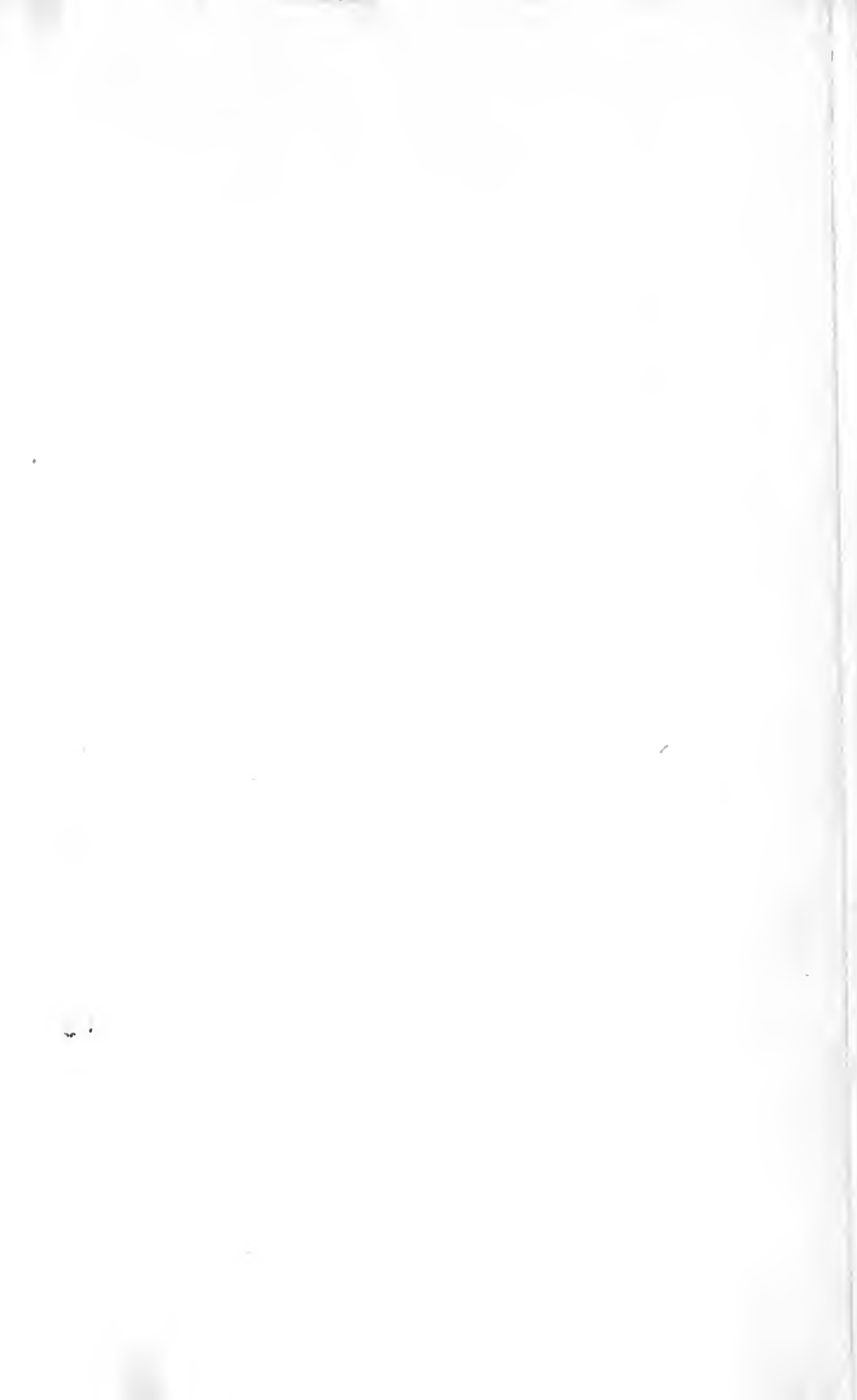
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